

**THE RAILWAY GAZETTE**

A Journal of Management, Engineering and Operation  
INCORPORATING

Railway Engineer · TRANSPORT · The Railway News

The Railway Times · Herapath's Railway Journal · RAILWAY RECORD.

RAILWAYS · ILLUSTRATED · ESTABLISHED 1835 · THE RAILWAY OFFICIAL GAZETTE

PUBLISHED EVERY FRIDAY

33, TOTHILL STREET, WESTMINSTER, LONDON, S.W.1

Telegraphic Address: "TRAZETTE PARL, LONDON"

Telephone No.: WHITEHALL 9233 (8 lines)

Annual subscription payable in advance and postage free

British Isles and Abroad ..... £2 5s. 0d.

Single Copies ..... One Shilling

Registered at the General Post Office, London, as a Newspaper

VOL. 81 No. 3

FRIDAY, JULY 21, 1944

## CONTENTS

	PAGE
Editorial Notes .. .. .	53
Railway Electrification Pros and Cons .. .. .	55
Diesel Traction in India .. .. .	56
Problems of Scientific and Industrial Research .. .. .	57
Letters to the Editor .. .. .	58
The Scrap Heap .. .. .	59
Overseas Railway Affairs .. .. .	60
Phenolic Plastics for Journal Bearings .. .. .	61
Electric Traction Section .. .. .	62
New L.N.E.R. Locomotive Depot in the North East .. .. .	64
Personal .. .. .	67
Transport Services and the War .. .. .	69
Stock Market and Table .. .. .	76

## GOODS FOR EXPORT

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as indicating that they are available for export

## NOTICE TO SUBSCRIBERS

Consequent on the paper rationing, new subscribers cannot be accepted until further notice. Any applications will be put on a waiting list and will be dealt with in rotation in replacement of subscribers who do not renew their subscriptions

## POSTING "THE RAILWAY GAZETTE" OVERSEAS

We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. THE RAILWAY GAZETTE possesses the necessary permit and facilities for such dispatch.

We would emphasise that copies addressed to places in Great Britain should not be re-directed to places overseas

## TO CALLERS AND TELEPHONERS

Until further notice our office hours are:

Mondays to Fridays 9.30 a.m. till 5.30 p.m.

The office is closed on Saturdays

## ANSWERS TO ENQUIRIES

By reason of staff shortage due to enlistment, we regret that it is no longer possible for us to answer enquiries involving research, or to supply dates when articles appeared in back numbers, either by telephone or by letter

## ERRORS, PAPER, AND PRINTING

Owing to shortage of staff and altered printing arrangements due to the war, and less time available for proof reading, we ask our readers' indulgence for typographical and other errors they may observe from time to time, also for poorer paper and printing compared with pre-war standards

## Rail and Road Competition

MR. F. BURROWS'S forebodings as to post-war competition between road and rail, and the likelihood that railway rates will be forced to an uneconomic level, to which reference was made in our last week's issue, has brought a rejoinder from the Joint Chairmen of the Road & Rail Central Conference. In a letter published in *The Times* of July 12, Mr. A. E. Sewell, Chairman of the Rail Panel, and Mr. Roger W. Sewill, his opposite number on the Road Panel, draw the attention of Mr. Burrows to the fact that for several years representatives of the railways and of the roads have been considering plans to prevent exactly what he foretells. They add that if these two services are allowed to complete their arrangements, subject to the right of the trader to appeal, there will be no "scramble for traffic," but railways and roads will be enabled to compete for traffic under conditions which they both regard as fair and which will be also in the wider interests of the nation. Mr. Burrows, of course, as we pointed out, was concerned to argue the case for public ownership as a post-war remedy for transport problems, and the obsession of the Labour Party with this purely political idea appears to blind its adherents to practical aspects of the problems they postulate.

## Co-operation More Useful

If the railway trade unions had not failed to appreciate the dangers of unlimited road competition, they would no doubt have lent their support to the railway companies when the latter first sought road powers from Parliament in 1921, and have used their efforts to effect co-ordination between the various forms of transport. Fundamentally, there are many aspects on which the true interests of the railway workers and companies are common, and in these matters the unions' spokesmen might serve their members better by collaboration with the companies than by chanting their old war cry of nationalisation on every opportunity afforded for promulgating political ideology. During the war, the men's leaders have done much to ensure efficient and uninterrupted working of the lines and, in comparison with some other basic industries, the railways have achieved an enviable reputation for freedom from labour stoppages. It would be unfortunate, and gravely prejudicial to the prestige of the great body of railway workers, who during the war years have received such well-earned commendation from all quarters, if the idea became current that the railway trade union leaders were devoting their energies to the support of the Labour Party's policy of nationalisation, without any serious consideration as to whether this policy would be in the true interests of those whom they represent.

## Dr. Leslie Burgin on State Control

Dr. Leslie Burgin, M.P., a former Minister of Transport, left members of the Engineering Industries Association in no doubt as to his dislike for political interference with industry, when he addressed them recently. In his view the only obstacles to an immense industrial revival on the home front are the penury or absence of raw materials, and the possibility of political intervention. He said that State control of transport had not succeeded, and State control of industry, in his judgment, was unthinkable. He dismissed from all suggestion of practical politics nationalisation on a large or small scale, and as unproved, and probably unworkable, any proposal for large-scale public ownership with the principal industries of this country. Stressing the importance of the profit motive, Dr. Burgin said that out of the profits of industry taxes, death duties, and stamp duties were paid; on industry direct and indirect taxation made its claim. Out of the balance of profits of industry, after payment to the State of taxation, there remained savings, and enlightened people would lend their savings to an enlightened State. A disgruntled people, or people that do not have trust in its Government, would not lend its savings.

## Colonel Norman A. Ryan

In our last week's issue the insignia were reproduced of the United States Army Transportation Corps, which comprises some of the most widely travelled personnel in the United States Army, and which this month celebrates the second anniversary of its foundation. As recorded on page 67, Colonel Norman A. Ryan has been awarded the Legion of Merit for "exceptionally meritorious conduct in the performance of outstanding services" while serving as Chief of the Military Railways Division, Transportation Corps, since May, 1942. Colonel Ryan, who in private life is General Manager (Lines West), Chicago, Milwaukee, St. Paul & Pacific Railroad, is a veteran of the Railway Transportation Corps of the last war, and has been in Great Britain as Assistant Chief of Transportation and Chief of the Military Railways Division, since May 26, 1942. Colonel Ryan's skill and ability, coupled with his tactful and friendly personality, have

done much, not only towards the technical achievements of the Corps, but also in the establishment of friendly relationships with British transport authorities. In co-operation with British railway officers, Colonel Ryan produced a 20-ton box wagon, and this has been adopted for use in this country as an alternative to the original plan to use 40-ton box wagons, which were unsuitable for use on British lines.

◆◆◆

### Overseas Railway Traffics

There has been a continuance of better prices for both junior and prior charge stocks of British-owned railways in Argentina, notwithstanding the absence of any pronouncement as to the attitude of the Argentine authorities. The new financial year began on July 1, and the figures of traffic receipts require some adjustment in view of the different dates for comparative calculations. Traffics of the Mexican Railway Company for the half-year to June 30 last show an increase of 1,166,600 pesos, but it is to be feared that expenses have advanced in a much greater degree. The Taltal Railway ends its financial year to June 30 with a rise of £16,519 in receipts, and the Nitrate Railways in the first 26 weeks of their accounting period can show an improvement of £21,413 in traffics. This company is still awaiting the sanction of the Chilean authorities for an addition to the 7 per cent. increase in tariffs already granted towards meeting the heavy increase in expenses. Antofagasta receipts from January 1 to July 9, 1944, have improved by £38,510.

	No. of week	Weekly traffics £	Inc. or dec. £	Aggregate traffic £	Inc. or dec. £
Buenos Ayres & Pacific*	1st	110,100	+ 22,140	111,660	+ 360
Buenos Ayres Great Southern*	1st	152,460	+ 20,940	172,200	+ 25,740
Buenos Ayres Western*	1st	57,360	+ 10,860	62,760	+ 2,040
Central Argentine*	1st	166,941	+ 56,334	187,551	+ 35,724
Canadian Pacific	27th	1,208,200	+ 59,200	32,123,200	+ 3,727,800

\* Pesos converted at 16½ to £

Great Western of Brazil traffics for the period from January 1 to July 8 amount to £597,900, an increase of £170,900.

◆◆◆

### Railway Hotels

An informal talk with Mr. Arthur Towle, Controller, L.M.S.R. Hotel Services, on a Glasgow scheme for training youth in Scotland in the arts of hotel service and management, is reported in *The Glasgow Herald* of July 12. During the course of the discussion it was pointed out that the Americans think Loch Lomond one of the "greatest locations" in Great Britain, but the entire hotel accommodation in the vicinity is less than 300 bedrooms. On the other side of the Atlantic, in the same circumstances, there would be 700 bedrooms. Mr. Towle is reported as saying that if Scotland is to be exploited in a tourist sense, width of imagination and enterprise will require to be shown. He thinks that the places which the home holidaymakers and the foreign visitors wish to visit may not always be capable of offering the proper standards of food, comfort and service, and this will continue until Scotland has taken seriously the problem of training its own hotel experts. The Scottish scheme provides for students to live and work in hotels, which should do something towards offsetting a scarcity of trained hotel personnel. In our January 21 issue we reported an interview with Mr. Arthur Towle, which had appeared in *The Glasgow Herald*, on railway hotel prices.

◆◆◆

### More British Railway Diesel Units

Very few British railway rolling stock figures have become available since the outbreak of war, but the Railway Executive Committee has recently announced, with the approval of the Censor, that the British railways today own 89 diesel units, compared with 62 immediately before the war, despite transfers to the War Department. The present total comprises 45 diesel-electric shunting locomotives (32 before the war), of which 36 are in railway service, employed mainly on shunting operations in important marshalling yards and traffic sidings, and 9 are on loan to government departments and industry; 4 diesel-mechanical locomotives (8 in 1939), of which one is on loan, and the remaining 3 have been converted into mobile generator sets; 39 railcars (compared with 21), which are engaged on passenger and parcels service, and in certain instances are operating special services for the conveyance of workers to government factories; and 1 three-car train unit, which is not now in service. These diesel locomotives and railcars are thus playing an important part in the movement of war traffics. Moreover, since the beginning of the war, more than 20 diesel locomotives have been transferred by the British railways to the War Department, and many of these have been sent overseas.

### Delayed Postal Deliveries

Since the flying bomb attacks against London and the Southern Counties of England began, postal deliveries have been subject to delay, and it is probable that this has affected the delivery of copies of *The Railway Gazette* to certain of our subscribers. This inconvenience has been common to many; in *The Times* on July 12 it was pointed out that some postal subscribers of that newspaper living in London and the Home Counties had been receiving *The Times* anything up to a day late, and in the case of supplements a much greater delay had occurred. The postal authorities have expressed the hope that the position will be materially improved by the end of this week. A Post Office official, referring to complaints, has said that the flying bombs caused some slowing down in the work of sorting mails and delivering them to railway stations and local post offices. Although the postal staffs had done their best, often at considerable personal risk, to minimise delays, they had not been able to deal effectively with them all; scarcity of labour was at the root of the delays in delivery. Unusually heavy mails have been arriving recently from our troops overseas, and efforts to deal with these letters has occasioned some delay in handling other kinds of mail.

◆◆◆

### Passenger Traffic and the Coastal Ban

One of the interesting traffic operating features of which it is unlikely that details will become available during the war, is the effect on railway passenger travel of the various types of ban which have been imposed on different parts of the country. The establishment of Protected and Regulated areas for long or short periods has applied to substantial portions of the country, and has reduced drastically travel to such areas, but not from them, and not within them. We do not know how closely it will prove possible to evaluate the loss, but any figures which may eventually be published should prove of keen interest to railway operating officers in other places and should provide one of those details about which information will not lose its savour with the cessation of hostilities. The raising of the coastal ban in Cornwall, Devon, Dorset, and part of Hampshire, from July 12, coincided with the evacuation from London, and thus the passenger figures will be inflated artificially for a short while. A study of war traffics, when details become available, might prove a fascinating and instructive contribution to the Proceedings of the Institute of Transport.

◆◆◆

### Railways on the Eastern European Front

Now that the series of magnificent advances of the Russian Forces has taken the Red Army beyond all the borders of the Russia of 1939, it is opportune to consider the vast scale of railway destruction and restoration that has been involved in the three years of intensely mobile warfare on the Eastern Front. So far, the Russians have had to restore more than 18,700 miles of railway, 2,500 stations and halts, and thousands of bridges. During the first four months of this year, some 300 bridges were either rebuilt or repaired, including some of the larger bridges over the Rivers Dnieper, Pripiet, and the southern Bug. In addition, hundreds of locomotive and wagon depots, water tanks, and electric power stations have been rebuilt, and some 20,500 miles of telegraph line (involving 155,000 miles of wire), have had to be built almost completely anew. The vast scale of this restoration overshadows the gauge conversion from 4 ft. 8½ in. to 5 ft. which is involved, as such extensive reconstruction suggests that few lines have been recaptured in a condition where the former track gauge mattered very much.

◆◆◆

### Plastics for Bearings

We publish on p. 61 an article in which the possibility of using plastics for axlebox bearings for railway rolling stock is examined, in the light of the present state of development of the materials available. Although the conclusions show that the time is not yet ripe for their application, chiefly because of their low thermal conductivity which necessitates a copious supply of water as a lubricant, it would be rash indeed to dismiss these new materials as not worth serious consideration. Many of their physical properties, such as low rate of wear, long life, and low coefficient of friction (which enables a great saving in power to be achieved) make them particularly attractive. They have given great satisfaction in roll-neck bearings in rolling mills where the working conditions are far more severe than in any locomotive. The wide—and increasing—amount of attention which they are attracting in engineering industries generally, and a remarkable tribute to the diversity of uses to which plastic materials can be put, was emphasized at a meeting at the Institution of Mechanical Engineers recently, when two authoritative papers—one a general survey and the other a description of the moulding plant—both written by engineers, were presented.



### Dogs in Passenger Coaches on G.N.R. (Ireland)

A recent notice by the Great Northern Railway Company (Ireland) providing for the absolute exclusion from passenger compartments of any "greyhound or other large dog" was almost bound to provoke some protest. This, however, has been withdrawn on an explanation by the company of the excellent and adequate arrangements which are being made for the larger dogs. Those of a size that can be accommodated on their owners' knees will still be conveyed in passenger compartments. Greyhounds and other large dogs for conveyance by passenger trains will on and from August 1 next be carried only in train vans, and a number of specially constructed kennels has been provided, and will be used where available for their accommodation. That is to say that big dogs must travel in comfortable kennels instead of in passenger coaches. In any event no large dog will be accepted for conveyance by passenger train, either accompanied or unaccompanied, except upon 24 hours' previous notice to the company's agent at the sending station, and provided also that suitable arrangements can be made for such conveyance. The railway company's notice seems to have brought about a suggestion that the Belfast Transport Committee should consider the question of dogs on trams and buses.

♦ ♦ ♦ ♦

### Commemorating the Telegraph Centenary

On May 24 a centenary of no small importance was celebrated in the United States. One hundred years earlier Samuel B. Morse sat down at his telegraph key in Washington and inaugurated communication with Baltimore by tapping out the first telegraph message. The pole line which carried the message had been erected along the right-of-way of the Baltimore & Ohio Railroad between the two cities, and this was significant, for from the first the railway business and the telegraph business grew up together, and realised their interdependence. Immediately after the telegraph became available, it was used in connection with train dispatching, and a railway superintendent at the time aroused universal attention by declaring to his directors that he would rather have a single-track line, with the electric telegraph to control the movements of its trains, than a double track without it. Today in the United States, out of 238,699 miles of pole line, about 206,000 are laid along railway property, and there are 15,283 telegraph offices in railway stations. The commemoration of the telegraph centenary, on May 24, 1944, took various forms, including broadcasts, newspaper and magazine publicity, a dinner at Washington of the principal railway and telegraph executives, and a telegraph message, sent with Morse's original instrument from the exact place in which he sat on May 24, 1844, in the Capitol at Washington, by Mr. E. E. Norris, President of the Southern Railway, and received in the Mount Clare Station at Baltimore by Mr. R. B. White, President of the Baltimore & Ohio Railroad.

♦ ♦ ♦ ♦

### Modern British Locomotive Depot Practice

Probably by reason of the world-wide publicity given to the centenary celebrations in 1925, mention of the name of the Stockton & Darlington Railway tends to conjure up visions of something historical, and probably the birth of some feature of British railway practice. In a sense this link with the past is maintained by a new L.N.E.R. locomotive depot which has been built by the L.N.E.R., for it replaces a depot built originally in 1841 by the former Stockton & Darlington Railway which has served faithfully for upwards of a century. The work has entailed the demolition of the whole of the main shed and repair shops to make way for the erection of a new machine shop, engine shed, and stores. In fact, the only original building to remain untouched is a small subsidiary round engine shed, located clear of the ground required for the principal alterations to the depot layout, which is used for stabling small type and pilot locomotives. Although security considerations prevent the precise identification of this depot, we illustrate and describe the work as indicative of the best modern practice. From this article (page 64), it will be seen that the main locomotive shed is of the through-running type, in accordance with British preference, and not of the roundhouse variety so popular in other parts of the world, but so vulnerable to disorganisation if its essential turntable be damaged. The new shed is 221 ft. long, with 7 through tracks and is capable of housing 21 tender engines of the largest type; pits are provided on all tracks. The old-fashioned coaling stage has been replaced by a new mechanical coaling plant, of 250 tons bunker capacity, with a number of novel features.

**CONTINUED NEED FOR SALVAGE OF PAPER.**—The encouraging progress of the Allied armies on all fronts in no way lessens the need for paper salvage. On the contrary, the increased expenditure of war materials, into many of which paper is used to an important extent, makes the necessity for salvage all the greater.

### Railway Electrification Pros and Cons

AS was briefly recorded in our July 7 issue, some notes recently have been prepared by a well-informed source dealing with the post-war electrification of the British railways. Below we reproduce the gist of the arguments advanced.

There are certain preliminary facts to be borne in mind in considering the matter:—

(1) There is a complete distinction between suburban electrification and main-line electrification. They present totally different problems.

(2) When all the theoretical or general information about electrification has been tabulated, it is quite impossible to conclude that a particular railway or section should or should not be electrified. This conclusion can only be reached by a detailed examination of the facts relating to the particular line, and these are almost certain to differ from the general information assembled.

(3) The detailed financial results of electrification schemes in different parts of the world remain virtually unpublished.

(4) There is a number of railways operated by electric traction abroad, but in most of the cases the main reason for electrification has been the desire to develop national water-power resources and to be independent of coal imports. Apart from this, conditions abroad are not comparable with Great Britain because of the comparative dense network of railways, roads and canals in this country, with the consequent complexities of layout.

There can be no precise definition of the distinction between urban-suburban electrification and main-line electrification, but broadly urban-suburban electrification relates to areas of heavy passenger-traffic density, with heavy peak loads morning and evening; main-line electrification refers to other than urban or suburban areas and includes freight traffic.

At December 31, 1938, there were 966 route miles (2,458 track miles) of railway electrified in this country, which was 5 per cent. of the total route mileage; they were practically all used for passenger work and were confined to urban and suburban areas and to the South Coast. This mileage compares with the following half-dozen leading electrified sections abroad:—

	Electric mileage per cent. of total route mileage
U.S.A. ... ..	1
France ... ..	5
Germany ... ..	4
Switzerland ... ..	55
Italy ... ..	39
Sweden ... ..	28

The total amount expended on all railway electrification, including the L.P.T.B., in this country is unknown, but it is estimated that the four main-line railways have spent some £50,000,000 on providing their electric services.

An examination of the case for further railway electrification in this country starts from the fundamental point that electrification is not an automatic necessity but must be considered in the light of hard facts. The cardinal principle of undertaking any new railway capital expenditure is the improvement or maintenance of net revenue, after allowing for the additional cost of providing the substituted capital. This applies to any scheme of electrification no less than to anything else. If electrification costs more than it can earn, it is not justified.

It is possible that after the war further urban or suburban electrification may pass this test, mainly because of the heavy traffic density, but even here an essential factor is that there will be a settled policy for transport as a whole that will make the commercial risk reasonably possible to accept. It is no use, for example, thinking of developing alternative facilities parallel to a section planned for electrification and going ahead with each in isolation. It may be that the aggregate capital involved cannot be remunerated by the traffic affected, actual and potential. The matter is made all the more uncertain if the alternative facilities are roads paid for out of public funds.

This is even more true if the issue is one of main-line electrification. Whereas it is possible to introduce a small or localised urban or suburban scheme of electrification for passenger services, this is impracticable for the main lines except to meet a particular physical difficulty. A scheme of main-line electrification must be large and must cater for all passenger and freight traffic. Further, it must by its nature, be undertaken by electric locomotives and not multiple-unit vehicles as with most suburban schemes. The difficulty of dealing with wagons, quite apart from technical considerations, illustrates the need for this. As to current, overhead transmission at 1,500 volts d.c. is the most economical method and the least dangerous. The Manchester, South Junction & Altrincham section of the L.M.S.R.

and L.N.E.R. is an example of this type, as also is the Manchester-Sheffield scheme of the L.N.E.R., which has been delayed by the war.

Probably the minimum stretch for a scheme of main-line electrification is 200 miles. At the same time, important branches would require to be converted to electricity, otherwise the change-over to and from these steam-operated sections would cause delays. It would also be necessary to convert some sidings, but it would probably be found that larger siding groups, marshalling yards and lines in sheds would be better dealt with by diesel-electric locomotives on the method now used. Minor places could be operated by small locomotives whether coal, oil or electric.

#### ADVANTAGES AND DISADVANTAGES

An ordinary steam locomotive has to haul its coal with it, whereas by electric traction the power is generated externally. Further, electricity removes all the problems of water. On the other hand, a locomotive which generates its own power (steam or oil) is more mobile than a unit dependent for its power on an external source. This last aspect must also be considered from the strategic standpoint; for example, the war experience in Italy with a vulnerable electric power supply. On the other hand a lesser use of home coal would be secured, to which has to be compared the greater use of imported copper.

So far as the permanent way is concerned, electrification would make no material difference to the track itself, except to require the provision of copper conductors and electric substations. The absence of smoke and fumes would reduce dirt and corrosion, particularly in tunnels and stations. There would be a saving in painting and an enhancement of property adjoining railways.

The locomotives required for an electrified system would be much more expensive than the simple steam locomotive that we know. Before the war an electric locomotive for main-line work would have cost about £10,000 compared with about £6,000 for a comparable steam locomotive; these prices are of course now out of date. There have been very great improvements in the steam locomotive in the inter-war period and this can easily be seen from the published statistics of locomotive performance. In addition, great economies have been obtained. No past inquiries into the matter are relevant now in regard to figures, particularly with the subsequent improved steam locomotive construction, maintenance and running costs. Any large-scale scheme of electrification would have to stand up to comparison with steam performance and operating costs, and to substitute an electric system for steam would mean that the former would have also to meet the premature destruction of a substantial amount of capital, even though conversion would be gradual. This is, of course, simply normal finance, the only difference in this case being the size of the amount involved. The change-over to electricity would probably lead to considerable displacement of manpower and this would have to be considered in the light of the Government's employment policy as envisaged in the recent White Paper. This would affect not only the railway industry itself but also the trades manufacturing railway equipment, such as steam locomotive builders, makers of components, and the coal industry. Against this would have to be set the increase in employment in the electrical trades. So far as carriages and wagons are concerned, electrification would make no material change, although here again there would be less corrosion and dirt, particularly in tunnels and stations, which would assist upkeep, both internal and external. There remains the question of passenger comfort. The absence of smoke and steam would be a considerable advantage, but there would be little difference in speed, and the riding effect would be much the same as now.

#### FINANCIAL EFFECT

As stated earlier, this is the crux of the matter. Electrification on the large scale which would be necessary would entail a greater investment in fixed assets with its effect on cost, interest, repair, renewal, and local rates—movable things are not rated. There is the clear risk of this being made a loss in the absence of a general plan for transport as a whole which would permit of the investment being made self-supporting. It is this which fundamentally governs any project for large-scale railway electrification in this country.

The cost of power is also a vital factor. In this case it is simply the cost of current *versus* the cost of coal. No one at present could say which of these would be more economical.

Weighing the advantages and disadvantages of electrification as set out above, and without allowing for the "unknowns," the probability is that from a purely railway working point of view there is a case for large-scale electrification in this country after the war. This conclusion would be reversed if a national policy for transport as a whole were not adopted. The British railways have never asked the State for any subsidy and they have not done so nor are likely to do so for electrification. If, however, the Government wish to extend the use of electricity

for non-railway purposes and require the railway load to lower the costs of supply, this is another matter altogether. It would introduce a different set of considerations. The same would apply if the Government desired to improve the amenities alongside railways and for this purpose wished to electrify the railways; in that case the benefit would accrue to the public generally or particular sections and would be outside the direct railway economy or otherwise of an electrification project.

The railways must be conducted with economy and efficiency whoever owns them. All the considerations mentioned—the "knowns" and the "unknowns," the purely railway and the non-railway—must be reduced to a net conclusion before large-scale electrification is decided upon. Most important of all is the national policy for transport.

### Diesel Traction in India

A REMARKABLY frank and unbiased account of diesel traction on the North Western Railway of India by Mr. H. W. Puttick, M.I.Mech.E., Chief Electrical Engineer of that railway has just appeared in the *Proceedings* of the Institution of Mechanical Engineers (Vol. 151, No. 1). Mr. Puttick has been fortunate in being able to collect first-hand information of the various diesel units in use before he joined that railway in April, 1940; after that date he has been responsible for a number of modifications designed to improve the performance of these units.

The author expresses disappointment at the poor showing originally made by the eleven Ganz diesel railcars which were ordered from the famous Budapest firm in 1937 and delivered in Karachi in January, 1939. Their early failures were all the more prominent because of their number and the important services in which they were engaged. Apart from them, comparatively little had been done in the direction of diesel traction on this railway, the only other examples being (1) the two Beardmore branch-line diesel-electric locomotives built in 1930, (2) the Armstrong-Whitworth mountain-line railcar of 1934, and (3) the two Armstrong-Sulzer 1,300-h.p. diesel-electric locomotives of 1935. Of these three types, the first was unsatisfactory, chiefly because of generator and motor troubles, and the two locomotives were scrapped in 1940; the second gave reasonably good service for several years, but in June, 1942, the car was attacked by Dacoits who killed the driver, and the engine was left running at high speed with the result that two pistons seized. The cylinder liner wear always had been excessive but the author gives details of how this has been reduced; in the 1,300-h.p. locomotives the generators and motors gave trouble, and due to the inability of the English contractors to supply more suitable generators and motors and to recondition the engines, the decision was made to scrap the two locomotives. "This deplorable decision," says Mr. Puttick, "following the poor performance of the Beardmore locomotives, gave a heavy set-back to diesel traction development in India."

Reverting to the eleven Ganz railcars which form the chief subject of the paper, we learn that although delivered in India in January, 1939, it was not until May that a service could be begun, due to the time needed for the training of drivers. Much of the trouble experienced in the early days of these cars was due to neglect to take elementary precautions such as fitting locking devices to nuts and to the fitting of ineffective air filters to the air intake of the air compressors, but at the same time the Railway Administration did not provide adequate servicing arrangements for the intensive service to which the cars were put and the author comments adversely on this point. Certain other features in the original design, for example, compressed-air systems, starter motors, and Hardy flexible couplings, gave considerable trouble. "The cars," states the author, "apparently were assembled hurriedly without adequate inspection, and one can only assume that the lack of adequate inspection was due to the disturbed state of Europe at the time (1938) the cars were built." Cylinder bores were not absolutely parallel, nor were the top and bottom faces of the cylinder blocks. Again, the connecting rods were found to vary in length by as much as 0.018 inch.

The most thorough and praiseworthy efforts were subsequently made to get the cars reconditioned and then to extract some useful service out of them. The success achieved in overcoming the difficulties originally encountered may be judged from the statement that the mileage per failure increased from the extraordinarily low figure of 7,000 during the seven months' service



in 1939 to no less than 173,854 during the three year period October 1, 1940-September 30, 1943.

The Ganz railcars were originally maintained on a mileage basis by the maker, but when Italy entered the present war it became impossible to get further spare parts from Hungary. Based on advice given by Ganz engineers, a comprehensive schedule of servicing was drawn up, but with the experience gained by the N.W.R. staff in the maintenance of these railcars, the mileage between light repairs rose from 18,000-20,000 to its present figure of 36,000-40,000. Since reconditioning the cars in three years have completed 1,043,122 miles in passenger service, with only 6 failures, and Mr. Puttick suggests that, given adequate servicing, diesel traction can be quite as reliable as steam. Special attention was devoted to the problem of cylinder wear, and now mileages up to 170,000 before rebores are definitely expected. Piston wear was also carefully investigated; excessive wear in the earlier stages is thought to be due to over-lubrication, which gave exceptional opportunities for carbonisation of the oil and so led to excessive wear. The excessive consumption of lubricating oil, however, was reduced drastically by the fitting of slotted scraper rings.

One of the most revealing items of this valuable account of a large-scale experiment is the analysis of the working costs. The average cost of repairs and maintenance is about 6 annas a mile, of which about 50 per cent. is due to the engine, 40 per cent. to the transmission, and 10 per cent. to carriage work. With electric, instead of mechanical, transmission it is fairly safe to say that the transmission costs would be halved. Mr. Puttick considers that railcars are not altogether suitable for Indian conditions, because of the great variation in traffic from day to day, and if railcars are used they should also be able to haul a trailer at slightly reduced speed when traffic considerations necessitate it; or, alternatively, it should be possible to couple two or more railcars and run them in multiple-unit formation. Both these conditions could be more easily met by having electric transmission. It is not possible to haul trailers with the existing cars as, although the engine has ample power, the adequacy of the main clutch and flexible couplings is only marginal in this particular design.

----

## Problems of Scientific and Industrial Research

IN our October 1, 1943, issue we reviewed a manifesto written by Sir Harold Hartley, Vice-President, London Midland & Scottish Railway, on the subject of industrial research. Our editorial heartily supported his plea for an extension of research work and at the same time explained what the British railways were doing in that important field. Now there comes to hand from Nuffield College, Oxford, a statement\* which embodies the findings of conferences held in January and April last to consider problems of scientific and industrial research. The statement is written in general terms and its principal points are summed up below.

(a) Research in this country has suffered both from lack of money and from a deficiency in the supply of trained staff. Money can be fruitfully spent in equipping the existing researchers with adequate resources.

(b) There is need for a rapid development of all forms of scientific and technical education. Fundamental research for the sake of pure science should be carried out at the Universities. Applied research designed to achieve practical results should be conducted by Government research stations, research institutes or associations and private firms. There should be close contact between the two branches of research, with a free interchange of workers from one to the other. The pursuit of pure science should not be allowed to suffer from any change in organisation.

(c) In 1916 the Government set aside £1,000,000 to enable the Department of Scientific & Industrial Research to co-operate with industry in founding research associations. There are now 25 of these bodies in existence, but they will never be put on a proper footing until they are financed by levies payable by all firms in each industry. In addition, there is likely to be need for a special development fund from which grants could be made towards the cost of large-scale experimental work required for the commercial application of scientific discoveries.

(d) The Government itself should take responsibility for research in industries which concern the national well-being such as agriculture, building, food and fuel. The State must also deal with questions like industrial welfare and safety, soil-erosion, forestry policy and water supply.

(e) The Government, in the public interest, may have to study the make-up of industrial costs with a view to passing on the

benefits of research to the consumer. Industrial research needs to be pursued in close relation to questions of economic policy.

(f) Some 20 to 25 research associations, each spending from £100,000 to £400,000 a year, could cover by far the greater part of the needs of British industry for research not already provided by the Government, Universities or private firms. Scientific workers and technicians to the number of 4,000 or 5,000 would be wanted and the annual running cost would be about £4,000,000, apart from initial capital expenditure.

(g) An improved international basis for patent law, accepted by all the leading industrial countries, and including effective checks on the use of "blocking" patents, is greatly to be desired.

(h) Any proposal that the State should give direct financial aid to the research expenditure of private firms, beyond what is granted in the shape of tax remissions, should be rejected.

(i) On the analogy of the R.N.V.R., a Royal Scientific Volunteer Reserve of trained workers should be formed and called up in time of war. In the present war the scientific mind and methods, largely statistical, have solved problems of military strategy and technique. This type of research might also be applied to the existing operations of production and distribution.

(k) Research workers give of their best when they are aware of the relations of their problems to those of students in other fields and are in touch with researchers using different methods.

With most of these assertions there will be little disagreement, though we dislike the tendency to rely on Government intervention at every turn and we feel that too much may be expected from an increase in the number of researchers and from elaborate equipment. Originality is of more consequence than mere numbers, and some of our greatest scientists and inventors used very simple apparatus. When the statement proceeds to discuss the background of research, the status of science and the possible effects of technical changes in industries, some of its doctrines cannot be accepted without qualification. In peace, it is said, scientific opportunity is limited by the prospects of the market and, when market conditions are adverse, a mood of frustration is speedily engendered in the world of science. We believe that, on the contrary, a time of financial stringency frequently spurs business men to look round keenly for improvements in their methods and machinery. The two answers to a trade depression are to reduce costs and to strike out on new lines calculated to restore turnover to its old level. The British and American railways had a lean time in the years 1930 to 1933. Their first endeavour was to cut down working expenses, but from 1934 to the outbreak of war a new spirit of energy and enterprise was evident on both sides of the Atlantic. Train schedules were overhauled, the comfort of passenger coaches was improved, high-speed trains appeared, the diesel-electric engine was tried on an extensive scale, close attention was paid to freight movement, the railway cartage force was rapidly mechanised and a great deal was done by the railways to co-ordinate rail, road, water and air services. We doubt whether there ever was a time when the railways were more receptive of fresh ideas or more willing to try new devices.

In an abstract disquisition about the pace of technical change, the statement argues that it cannot be speeded up as much as scientific possibilities require without the adoption of extensive measures of compensation and retraining for displaced workpeople. Obsolescence, it is suggested, may strike at the entire life of local communities dependent on one branch of production and it may then be socially expedient to slow down the rate of change so as to avoid the creation of distressed areas. The idea that one of our industries can be too closely up to date seems far-fetched. Distressed areas were caused by the fading out of old industries like coal mining, shipbuilding, marine engineering and cotton manufacture which could not be made to flourish by installing modern appliances. The authors of the statement appear to be bringing into the discussion of research matters which are really connected with employment policy and the location of industry. If this country is to hold its own in the years after the war and to expand its exports, we do not see how there can be any question of slowing-down the urge for progress.

The general tenor of the recommendations made in the statement is supported strongly by a long array of men who have made their mark in industry, economics or science. They are, however, careful to say that they do not hold themselves committed to every particular and our own feeling is that the statement reads like an academic essay. We appreciate that it is intended to deal with principles, but, without becoming a factual study, the document would have been more convincing if its pronouncements had been accompanied by a summary of the evidence and statistics on which they are based. Its appeal would also have been strengthened if a programme had been drawn up to show the stages by which research can best be advanced in our work-a-day world. Any practical scheme would naturally extend over a term of years and would be modified from time to time in the light of experience.

\* Problems of Scientific and Industrial Research. A Statement by Nuffield College, Oxford University Press (London: Humphrey Milford). Price 2s.

## LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

### Revision of Operating Rules

C.T.S.'s Office,  
Great Indian Peninsula Railway,  
Bombay. June 20

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—As I have been asked to undertake the revision of the operating rules of this railway, if your policy permits, I would much appreciate if you can send me some relevant extracts from *The Railway Gazette*; or you can pass my request to any of the operating officials who are in a position to give information on the following points:—

- (1) Steps taken to revise the operating rules to enable handling of maximum traffic.
- (2) Steps taken to smash bottlenecks in transportation; that is, to avoid congestion at terminals.
- (3) Information regarding formulas which should compare favourably with practice, to fix up capacity of a section, including line or track and power capacities.
- (4) Examples of slight modifications to lay-out, etc., as big remodelling schemes cannot be undertaken at present, which increase capacity and speed.

Yours truly,  
P. N. IYER,  
Controller

### What is a Wayside Station?

Hertfordshire. July 10

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The L.M.S.R. is to be congratulated on the rebuilding of Luton Station and, at this time when planning is a pet hobby, all who take an interest in railway working will be glad to study the descriptive article in your July 7 issue. But, would Mr. L. Burgin, M.P., and his constituents, admit that Luton is a wayside station? There must be over 100,000 people in the neighbourhood and both our Northern railway systems deal with a heavy passenger and freight traffic.

I should myself apply the term "wayside" to stations serving small country towns and villages—in fact to the class of station which is seldom remodelled because its business never varies a great deal from year to year, and in many cases has been declining since road transport came on the scene. Speaking broadly, one cannot see how the railways can earn a return from expenditure on passenger stations except at prosperous towns like Luton, where accommodation has become inadequate or at places on sections of line which are being electrified. Ordinary maintenance is all that can be justified as a general rule.

Yours faithfully,  
WAYFARER

### Low-Level Station at Nottingham

27, Nether Edge Road,  
Sheffield 7. July 6

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—It is with much pleasure that I read your notes on the closing of the low-level station at London Road, Nottingham, in your June 30 issue. I have recollections of this station over a number of years. The last G.N.R. train to use it was one

which was advertised in the public timetables at 5.5 a.m. to Newstead *via* Gedling. Subsequently, although advertisements ceased, it ran as a miners' train at the same time, until passenger service was withdrawn on the Leen Valley Line, G.N.R. Only two platforms were used, the main departure platform, and one outside the main roof, next to the L.M.S.R. line, for arrivals. Between these lines, a lot of the track, switch, and crossing works had been removed, and a number of points were worked by hand, instead of from the box. For some years before its closure to passenger trains, departing passenger trains used to work through hand points, though admittedly in the trailing direction. It had got very dirty, and, in being partly used as a goods shed, the odour of horses was very pronounced. One thing always amused me; namely, the board outside the station which advertised that there were trains to the leading towns in the Midlands, which were given by name; the selection almost vied with the station board that used to be displayed on the platform of Woodford-Hinton G.C.R. for destinations.

The end of Low Level also reminds me of another station apparently going the same way. I refer to Leicester (Belgrave Road). It has, I believe, nine platforms. Nos. 1-6 are used for goods and Nos. 7-9 for the five passenger trains (seven on Saturdays) which used the station. Like Low Level, alterations to the switch and crossing work have been made; some of it having become unnecessary in view of the use to which part of the station has been put.

Yours faithfully,  
D. J. WORRALL

### Railway Gauge in Entre Rios

Westminster, S.W.1. July 11

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—After the publication, in *The Railway Gazette* of October 1, 1943 (page 331), of the map showing the railways of Argentina and their gauges, a correspondent directed attention to the fact that the group of lines owned by the Argentine State Railways in the Entre Rios territory, in the neighbourhood of Villa Federal, was shown as being of metre gauge, whereas he stated that they were actually of standard gauge, namely, 4 ft. 8½ in.

There can be no doubt that this correspondent is correct, and that all the railways between the Rivers Parana and Uruguay are of the British standard gauge of 4 ft. 8½ in.

At the same time, this query has brought to light one of the most amazing and long-standing repetitions of error which we can recall, for the gauge of this group of lines owned by the Argentine State Railways, including that to Diamante, is shown as metre on the latest edition of the *Diagram de los Ferrocarriles de la Republica Argentina*. It was shown similarly in the map published in *The Railway Gazette* special South American number of November 22, 1926 (page 5), which was checked officially. The large folding map in Killik's *Argentine Railway Manual*, of which the last edition was published in 1935, showed the same differentiation of gauge between the Entre Rios Railways system and that of the State Railways in this area.

It has been suggested to us that a possible explanation is to be found in a custom of the Argentine Government to authorise all State railways as metre-gauge lines, as the normal practice, and then to authorise separately their construction to a different gauge if local circumstances or connections with existing railways of other gauges should make such a course desirable.

Yours faithfully,  
YOUR CHIEF DRAUGHTSMAN  
YOUR MAP DESIGNER

### Publications Received

**Railroad Panorama.** By A. C. Kalmbach. Wisconsin, U.S.A.: Kalmbach Publishing Company, 1027, N. 7th Street, Milwaukee, 3. 9 in. x 6 in. x 1 in. 228 pp. Illustrated. Price \$2.75.—The popular U.S.A. journal *Trains*, which presents reliable and well-illustrated details of American railways in a form designed to please the railway enthusiast, contains many contributions from the pen of its Editor, Mr. A. C. Kalmbach, and some of these are reprinted as chapters in the present volume. As the title indicates, this book makes no attempt to be a carefully-arranged chronological history or complete description of any aspect of American railways. The author has taken representative features and described them accurately, and in

interesting style. For example, "Grand Central Terminal" is a chapter describing the development and current working of the great New York station which in 1942 handled more than 50,000,000 passengers. Two famous trains that form the subject of separate chapters are "The 20th Century Limited" and the "Empire State Express." The pioneer Milwaukee main-line electrification holds our attention for another chapter. The author has not confined his stories to streamliners, nor even to passenger traffic, but has given us 20 chapters, well illustrated, which combine to present a panorama of U.S.A. railways. It makes good reading.

**They Also Serve.**—This interesting and well-produced booklet has been issued by B.S.A. Tools Limited, Birmingham, in appreciation of the splendid work achieved

by our women in the machine tool industry. Without adequate supplies of machines and cutting tools, the actual production of war weapons would be seriously retarded. The manufacture of machines and tools requires a degree of skill and accuracy, normally acquired only after years of experience. Many of the jobs described and illustrated in the booklet are carried out by girls and were formerly considered quite beyond their capabilities. They cover such operations as milling reamers having staggered teeth, which calls for great dexterity and care in the use of a dividing head and in indexing, and the setting up of grinding machines to produce extremely accurate components for new machines, and cutting tools for use in conjunction therewith. The booklet brings to the limelight the vitally important contribution by women to the war effort.



## The Scrap Heap

### A THOUGHT FOR TO-DAY

The loss of our friends and companions impresses hourly upon us the necessity of our own departure; we know that the schemes of man are quickly at an end, that we must soon lie down in the grave with the forgotten multitudes of former ages, and yield our place to others, who, like us, shall be driven awhile by hope or fear about the surface of the earth, and then, like us, be lost in the shadows of death.—*Dr. Johnson.*

### PUBLIC OPINION

A poll carried out by the *Daily Express* Centre of Public Opinion resulted in two-thirds of those who answered the questionnaire declaring in favour of the nationalisation of the coal mines; 59 per cent. took the same view about the railways.

### BEAUTY FROM THE RAILWAY

Two bishops, a dean, a peer, a county court judge, the President of the Royal Society of Painting & Water Colours, the Master of Trinity College, Cambridge, the Secretary of the Automobile Association, are among a number of people who have signed letters to *The Times* protesting against plans for the erection of a large electrical plant at Durham. The first letter to appear claimed that "the present view of the cathedral and castle of Durham from the railway, which is familiar to thousands who know little more of the city, has hardly a rival in Europe." Other letters have also stressed the importance of maintaining the view from the railway.

### LINK WITH THE PAST

A casual farm labourer in England recently bought an old watch from a hawker for 7s. 6d. and sold it to a farmer for 15s. It was subsequently bought for £15. The watch was made by William Blews, London, and is a Verge. Though slightly dilapidated, it is still in working order and quite sound. Because of an inscription which was found by the farmer's son while cleaning the watch, the value is now so high that four figures could not buy it. The inscription reads:—"George Stephenson, Engineer, Killingworth Colliery, 1812." It is now housed in the collection of Stephenson relics in the Newcastle Science Museum.—*From the "South African Railways and Harbours Magazine."*

### DECANONISE ST. SWITHIN

"This," remarked Alice, glancing at the sky, "is St. Swithin's Day."  
"You musn't say a thing of that kind!" cried the Red Queen in horror. "It's against the censorship regulations."  
"Oh, no, it isn't," said Alice. "You can't censor a saint who has been dead for more than a thousand years."  
"I'm not at all sure about that, child," said the Red Queen. "They could probably censor Noah himself and his Flood if he showed any signs of assisting the enemy."  
"Well, I can only hope you're right," said Alice.  
"And why?" demanded the Red Queen.

"Because if the weather for the next forty days is no better in Normandy I should like to see Swithin decanonised and put on the list of war criminals."—*From "The Manchester Guardian."*

In Great Britain we complain of the number of Government offices and bureaucratic agencies, but we cannot compete with the United States. In giving the following list *The Argonaut* points out that it is far from complete:—

FWA—Federal Works Agency  
NRA—National Recovery Act  
NIRA—National Industrial Recovery Administration  
USMC—United States Maritime Commission  
HOLC—Home Owners Loan Corporation  
AAA—Agricultural Adjustment Agency  
CCC—Civilian Conservation Corps  
NYA—National Youth Administration  
SSB—Social Security Board  
BWC—Board of War Communications  
FDIC—Federal Deposit Insurance Corporation  
FSA—Federal Securities Administration  
NAC—National Archives Council  
TNA—The National Archives  
NLRB—National Labor Relations Board  
NHPC—National Historical Publications Commission  
NMB—National Mediation Board  
USHA—United States Housing Authority  
USES—United States Employment Service  
FIC—Federal Insurance Corporation  
CWA—Civil Works Administration  
RA—Resettlement Administration  
FPHA—Federal Public Housing Authority  
FHA—Federal Housing Administration  
CCC—Commodity Credit Corporation  
FCIC—Federal Crop Insurance Corporation  
FSA—Farm Security Administration  
SCS—Soil Conservation Service  
AMA—Agricultural Marketing Administration  
FREC—Federal Real Estate Board  
CES—Committee on Economic Security  
WPA—Works Progress Administration  
FCC—Federal Communications Commission  
OBCCC—Office of Bituminous Coal Consumers Council  
RRB—Railroad Retirement Board  
SEC—Securities and Exchange Commission  
TVA—Tennessee Valley Authority  
BIRT—Board of Investigation and Research—*TRAF*  
CAA—Civil Aeronautics Authority  
NIC—National Investors Council  
DPC—Defense Plant Corporation  
RRC—Rubber Reserve Company  
MRC—Metals Reserve Company  
DSC—Defense Supplies Corporation  
WDC—War Damage Corporation  
DLC—Disaster Loan Corporation  
FNMA—Federal National Mortgage Association  
RACC—Regional Agricultural Credit Corporation  
CFB—Combined Food Board  
UNRRA—United Nations Relief & Rehabilitation Administration  
CEA—Commodity Exchange Administration  
SMA—Surplus Marketing Administration  
FSCC—Federal Surplus Commodity Corporation  
FFC—Foreign Funds Control  
PRP—Production Requirements Plan  
CRMB—Combined Raw Materials Board  
CMB—Combined Munitions Board  
CSAB—Combined Shipping Adjustment Board  
CPRB—Combined Production and Resources Board  
CCS—Combined Chiefs of Staff  
PWA—Public Works Administration  
AOA—Administration of Operation Activities  
EIBW—Export-Import Bank of Washington  
EHFA—Electric Home and Farm Authority  
CPA—Council of Personnel Administration  
PRA—Public Roads Administration  
EPCA—Emergency Price Control Act  
FPA—Food Production Administration  
OES—Office of Economic Stabilization  
PAW—Petroleum Administration for War  
SWPC—Small War Plants Corporation  
PIWC—Petroleum Industry War Council  
NRPB—National Resources Planning Board  
LOPM—Liaison Office for Personnel Management  
OEM—Office for Emergency Management  
SSS—Selective Service System  
NWLB—National War Labor Board  
OCD—Office of Civilian Defense  
OCIAA—Office of Coordinator of Inter-American Affairs  
ODHWS—Office of Defense and Health Welfare Services  
ODT—Office of Defense Transportation  
OLA—Office of Lend-Lease Administration  
OSRD—Office of Scientific Research and Development  
OWI—Office of War Information  
WMC—War Manpower Commission  
WPB—War Production Board  
WRA—War Relocation Authority  
WSA—War Shipping Administration  
OPA—Office of Price Administration  
BEW—Board of Economic Warfare  
NHA—National Housing Agency  
FCA—Farm Credit Administration  
REA—Rural Electrification Administration  
SA—Sugar Agency  
PCD—Petroleum Conservation Division  
PCOW—Office of Petroleum Coordinator for War  
WEPL—War Emergency Pipe Lines, Inc.  
BCD—Bituminous Coal Division  
PRRA—Puerto Rico Reconstruction Administration  
BPA—Bonneville Power Administration  
NPCC—National Power Policy Committee  
OC—Office of Censorship  
FRC—Facilities Review Committee  
PWRCB—President's War Relief Control Board



"Daisy? . . . They've stopped the train running, so I don't quite know how me and the fireman will get back home"

[Reproduced by permission of the proprietors of "Punch"]

Altogether, 2,794 cases of theft, and 186 of burglary were reported on the East Indian and Bengal-Nagpur Railways in Bihar during 1943. In the preceding year (that in which the civil disturbances took place) the numbers were 1,772 and 172, respectively.

### BOX TUNNEL

Everyone knows that Brunel's famous Box Tunnel burrows through the watershed between the valleys of the Thames and the Avon. But not everyone realises that it is a minor St. Gothard Tunnel: it links two climates which are almost as distinct as the climates of Switzerland and Northern Italy. The countryside you come out into in the train at the end of the tunnel is far more southerly in vegetation: it has that characteristic West-of-England lushness of foliage and meadow, and it has a corresponding mildness of air—some people call it a relaxing atmosphere. If one comes to think of it, it would be surprising if such an abrupt change of climate was not echoed in the physical appearance of the first considerable town to the west of the bleak, high plateau of Salisbury Plain. And as far as I know, Bath is one of the few English towns that can be viewed from the train as something approaching a whole.—*P. Morton Shand in "The Listener."*

### TAILPIECE

(Deep-level shelters may have a post-war use as sections of an express tube railway)

Beyond these days and strain and stress  
The roaring of the tube express  
May yet be heard where Dick and Tom  
Take shelter from the flying bomb.

Existing tubes in duplicate  
May function at a later date,  
And tube expresses sally forth  
From east to west and south to north.

To those quick routes still undesigned  
The p-plane shelters are aligned,  
And may assist, when war shall cease,  
To meet the traffic needs of peace.

E. C.

## OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

### SOUTH AFRICA

#### Natal Railway Works

The following major works are among those proposed for execution in Natal during the financial year 1944-45:—

(1) Electrification of the line between Pentrich and Umlaas Road (£118,500), and easing of curves along this track (£21,000).

(2) Doubling and improvement of the line between Boughton and Umbulwana in the Natal Midlands (£2,115,000).

(3) New marshalling yard at Durban (£643,000).

(4) New carriage yard at Durban (£49,000).

(5) New motor repair shops at Pietermaritzburg (£100,000).

(6) New mechanical workshops at Durban (£2,490,000).

It is proposed also to spend a further £163,000 to complete the Salisbury Island development (total cost, £534,500).

Of the £3,000,000 which the Railways & Harbours Administration expects to spend on the three new major aerodromes at Cape Town, Johannesburg and Durban, £250,000 is allocated for expenditure this year.

A new station and yard at Dundee will cost £29,500, of which £9,500 will be spent this year, and an extension of goods-shed facilities at Port Shepstone will cost £29,400, of which £8,000 will be spent this year. Only £5,000 will be spent during the year on the new passenger station at Durban, the total cost of which will be £377,000. At Pietermaritzburg the wagon-repair shops are to be extended, and it is proposed to spend £5,400 on further work in connection with the new electric locomotive repair shop. Another £15,000 is to be spent this year in the replacement of the bridge over the Umkomaas River. Six new stations are to be built in Natal, but it is intended in the current year to start the work at Dundee and Utrecht only.

#### Electrification

An additional £15,000 has been provided for the electrification of the line to Hillcrest; the estimates indicate that £4,000 will be spent on the scheme this year. Work will be commenced on a new electric running shed at Umbilo, the total cost of which is estimated at £67,000. Locomotives in subsequent years will include 50 of electric power (at a cost of £1,150,000).

During the year 1944-45 the Administration expects to spend nearly £8,000,000 from loan and betterment funds, an increase of over £2,000,000 compared with last year.

### UNITED STATES

#### Northern Pacific 1944 Programme

Total expenditure in 1944 of the Northern Pacific Railway, not only to deal with increased war traffic but also to prepare for the post-war period, is expected to exceed \$20,000,000. Of engineering works, the principal items are the extension of the locomotive shops at Livingston, Montana, already in progress (which is to cost \$1,500,000); the new 3,000-ft. Bozeman Tunnel in Montana (\$1,250,000); reconstruction of the diesel shops at Auburn, Washington (\$500,000); relaying of tracks with 40,000 tons of heavier rail (\$3,250,000); and re-ballasting with 1,000,000 tons of rock ballast (\$2,500,000). Rolling stock on order includes eight 5,400 b.h.p. triple-

unit diesel-electric main-line locomotives (one of this type commenced service last February); five 1,000 b.h.p. diesel-electric shunting locomotives (four have already been delivered); and eight articulated steam locomotives.

#### More Diesels for the New Haven

The New York, New Haven & Hartford Railroad is proceeding with the gradual conversion of its express passenger service over the non-electrified section of the New York-Boston main line, from New Haven northwards, from steam to diesel-electric haulage by further purchases of diesel units. Orders have been placed with the American Locomotive Company for twenty additional 2,000 b.h.p. diesel-electric main-line locomotives (which can be worked in pairs, multiple-unit, as 4,000 b.h.p. locomotives), also for twelve 1,000 b.h.p. shunting locomotives; and with the General Electric Company for ten 44-ton light shunters.

#### Use of Air Brakes in Shunting

On February 13 last, a head-on collision occurred on the Virginian Railway at Roanoke, Virginia, between an eastbound "extra" freight train (not normally scheduled) of 81 bogie wagons and a caboose drawn by an electric locomotive, and a steam shunting locomotive pushing two and pulling four wagons, as a result of which one employee was killed and two were injured. The collision took place on a 10-ch. curve, where visibility was limited to 300 ft.; the "extra" freight was estimated to be travelling at 10 m.p.h., and the shunter at 8 m.p.h. The authorised speed in yard working will permit a train to stop in half the range of the driver's vision—in this case 150 ft.—but the shunting locomotive was operating without the crew having coupled up the air-brakes of the six wagons which were being pushed and pulled, and the report of the Interstate Commerce Commission's representative states that the collision was primarily due to this omission. Furthermore, the omission was a violation of the Safety Appliance Law and of an order of the I.C.C. of June 6, 1910, requiring the use of power-brakes when shunting. The report states that the infringement of these regulations is attributable to the absence of any instructions by the company to its staff concerning the matter.

### ARGENTINA

#### Intervention of National Railway Board

A Decree issued on May 30 ordered the "intervention" of the National Railway Board and appointed Señor Eduardo I. Rumbó as Interventor. The Decree states that this measure has been adopted in view "of the necessity for making an integral investigation of the department for the purpose of bringing up to date its structure in such a way as to allow a better organisation of its functions within principles of social justice and good government." The terms of the Decree are practically identical with those which ordered the intervention of the State Railways.

#### Union's Criticism

The intervention of the National Railway Board caused little surprise, as it had been expected for some time. It will be recalled that the petition presented by the Union Ferroviaria on March 20 (see *The Railway Gazette* of May 19 last) requested the intervention of the Board "on account

of its anti-labour and anti-Argentine attitude," shown, it was alleged, by hundreds of resolutions which implied punishments for employees and directly benefited the private railway companies through the violation of the existing laws. The Union's petition further alleged that the National Railway Board, from an organic point of view, had maintained various views which openly opposed labour legislation and clearly contradicted employees' interests; and that many of the railwaymen's problems had not been solved up to the present due to its dilatory action in the matter of ascertaining the real capital account of the railway companies with a view to determining the application of the Presidential Award and the return of the salary retentions; it was added that the State had been unable up to now to ascertain what was the value of the railways which crossed the country in all directions, and what was the real capital account of each, which information would be necessary if the day should come when it was decided to nationalise them.

#### Salary Retentions

Other points contained in the Union's petition were:—

(1) That the Central Secretariat of the Labour Union had a large file which showed the partiality with which the official organisation in question had always interpreted the provisions governing the work of the servants of the public and private railways, and had opposed the return of the salary retentions, the reason for which measure was, it was alleged, the deficient control of the accounts of the private railway companies. In that connection, it was stated that railwaymen did not accept the contention of the National Railway Board that the deductions effected since the application of the Award, as from October 23, 1934, be considered as lost, since those retentions formed integral parts of the salaries of the employees, who, although they agreed at the time to contribute to solve the companies' economic difficulties, did so taking into account the assertion of the Award itself that "profits may not be distributed to the shareholders until the entire return of the retentions is possible," which should have been taken by the National Railway Board as a guiding principle in solving the vital labour problem in question.

(2) That, had the "five volumes" report been put into effect, thousands of employees would have been dismissed, with the consequent violation of the labour laws in force.

(3) That the National Railway Board be reorganised, thereby rendering more feasible the solution of the problems referred to and the possibility of reforming the Labour Regulations, on the basis of a true and correct application of Law 11,544.

### SWITZERLAND

#### Red Cross Exhibition Train

An exhibition train which gives a vivid picture of the International Red Cross Committee's activities was opened in Berne on April 28 and started from Geneva on April 29 on a 2,150-km. (1,330-mile) tour of Switzerland, to end on July 30. Stops of one to three days are made at 70 cities and small towns, and the train is stationed in convenient sidings. It is composed of three British-built dining cars lent by the Swiss local management of the International Sleeping Car Company, one of which is fitted as a cinema van. The train is accompanied by a staff of eight officials of the International Red Cross Committee, and has been proving very successful.



## Phenolic Plastics for Journal Bearings

### Their properties examined in the light of railway requirements

THE highly successful results now obtained with phenolic plastics for bearings in a number of industrial applications might well cause the layman to ask why they do not appear to have been tried on railway rolling stock. The whole subject of the manufacture, uses, and possible future fields of application of plastics in the engineering industry was capably summed up and ably discussed at the Institution of Mechanical Engineers on December 10, 1943, when papers entitled "A Survey of Plastics from the Viewpoint of the Mechanical Engineer," by Dr. Livingston Smith, and "Moulding Plant for Plastics," by Mr. J. L. Daniels, were presented. The immense range of modern plastic products was emphasized further by an exhibition of materials and of specimens of moulded articles in the entrance hall.

It is important to bear in mind, when considering the possibilities of plastics for bearing materials the advantages they offer by virtue of certain of their physical properties, in comparison with the time-honoured bronze and whitmetal bearings in normal railway practice. Among these properties are:—

- (1) Lightness: specific gravity about 1.35.
- (2) Reasonably good tensile strength: 9,000-12,000 lb. per sq. in. along the grain.
- (3) High compressive strength: 40,000-45,000 lb. per sq. in. at right angles to laminae and 20,000-24,000 lb. per sq. in. parallel to laminae.
- (4) Low water absorption: 0.5-0.8 per cent. on test piece  $2 \times 2 \times \frac{1}{2}$  in.
- (5) Oil absorption: negligible.
- (6) Low coefficient of friction: 0.008-0.025.
- (7) Safe working temperature: 200-220 deg. F.

Test results have shown remarkably low wear with these bearings on continuous heavy-duty work over prolonged periods. Due to the low coefficient of friction, a great economy in power—some 25-50 per cent.—is effected, as energy which in ordinary bearings is largely absorbed in friction is made available. Plastic bearings, moreover, are very cheaply manu-

factured; they have a life 6-10 times longer and are much more resistant to shocks than ordinary bearings.

The most impressive testimony to the qualities of plastic bearings is their use in rolling mills where the operating conditions reach the highest degree of severity. In many rolling mills, in several countries, such bearings have replaced the ordinary Babbitt or bronze type, and have shown themselves to be easily able to carry the load, and to reveal no signs of hardening or cracking (as in bronze) or "creeping," or flowing (as in a Babbitt bearings). The material virtually acts as a polishing pad, keeping the roll necks in good condition. Pressures up to 4,000 lb. per sq. in. have been satisfactorily borne.

What then, is the objection, in view of so many favourable features, to the use of such bearings for, say, the driving wheels of a locomotive? The answer—always bearing in mind that it is relative to the present state of the art—lies in the poor heat conductivity of the plastic material as compared with the metal normally used. Actually it is about 500 times less. It is therefore essential for sufficient lubricant to be carried around the bearing to remove all the heat generated, in addition to fulfilling the lubrication requirements themselves. Oil or grease has been used, but generally, in large, heavy applications, such as would be equivalent to locomotive axleboxes, water is the lubricant most widely employed—for obvious reasons.

On stationary plant, such as rolling mills, this presents no objection, and indeed offers many advantages compared with oil lubrication, but in locomotive work difficulties arise at once. The first point is to consider how much water would be required to keep the bearings at their safe working temperature. Various formulae, many of them empirical, have been employed for this purpose; but from first principles, the rate of generation of heat (in British thermal units) at any instant is

$$(\mu \times p \times s) \div 778$$

where  $\mu$  is the coefficient of friction,  $p$  the pressure in pounds per square inch,

and  $s$  the rubbing speed in ft. per min. If the bearing dimensions are known, the amount of water  $Q$  required (in gallons per hour per bearing) may be calculated from the empirical formula

$$Q = D \times P \times \mu \times \text{r.p.m.} \div 16,000$$

where  $D$  is the diameter in inches,  $P$  the total load on the bearing in pounds, and  $\mu$  the coefficient of friction as before.

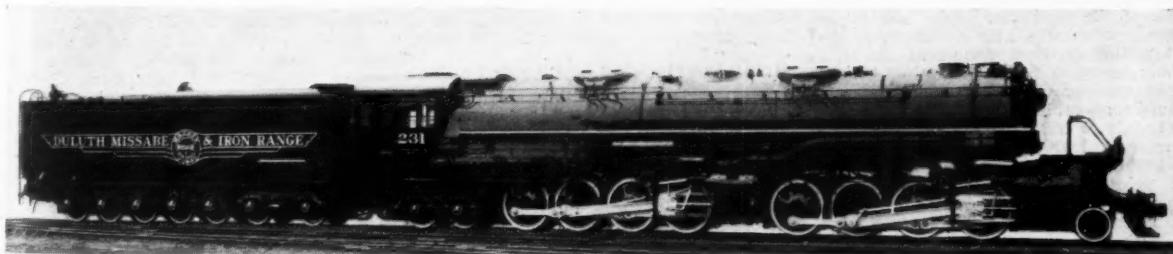
A rough estimate for a  $9\frac{1}{2}$ -inch dia. journal loaded to a total pressure of 10 tons (the common 20-ton axle loading) and rotating at 300 r.p.m. shows that the amount of water required is about 30 gal. hourly per bearing, or about 180 gal. for a six-coupled engine. A reasonably long run of  $2\frac{1}{2}$ -4 hours in pre-war conditions might thus easily account for a water consumption of about 500-700 gal., which is a seriously large proportion of the total water requirements for such a run.

No water is needed, of course, while the engine is stationary, but in no circumstances should a bearing begin to run without the water being first turned on, and flowing copiously. This at once presents difficulties in the use of a pump worked off some moving part of the engine, on the lines of the present-day mechanical lubricator. A further point is the prevention of rusting on the journal during standing periods and shed days, though this objection can be minimized by the application of a little grease which, incidentally, will also help in starting.

In Germany laminated bearings have been used, in conjunction with oil lubrication, for wagons, and it therefore appears that a beginning, though small, has been made. The sight of an express engine with half-a-gallon of water pouring each minute from the coupled axleboxes is perhaps not so fantastic as it sounds. From the physico-mechanical point of view, future developments in this direction should be aimed principally at the production of a material with a higher coefficient of thermal conductivity, so that the heat generated in running can be got away more quickly.

The only commercial objection to the use of plastic bearings has been the comparatively high cost of producing the moulds. In the discussion on the two papers referred to above, this point was mentioned, and there seems to be reasonable hope that new processes, cheaper than the hobbing process and the "chain method," may be made available by future research.

## Baldwin-Built Articulated Locomotives for Ore Traffic



Reference has been made on several occasions in these pages to the new 2-8-8-4 type articulated locomotives for handling ore traffic on the Duluth, Missabe & Iron Range Railway. Editorial reference was made in our issues for September 3, December 3, and December 24, 1943; a brief description and principal dimensions and performance particulars were given in our September 3 issue. Above, by the courtesy of our American contemporary the "Railway Age," we give a general view of one of the new units

## Signalling Developments on L.P.T.B. Lines\*—II

*Standardisation of the electro-pneumatic system, developments in relay design and improvements in construction described by*

*Mr. R. Dell, Signal Engineer, L.P.T.B.*

IT is now the practice to provide separate main current and compressed air supply on each side of a double line, fed from the Board's own substations. Armoured cable is used in the open, on cast-iron brackets, with transformer at each tapping and links; every tap is a point where the supply can be isolated. The use of polarised relays necessitates safeguards against a reversal of phase as a result of switching at the feed point; the main cable is looped as far as the limit of connections involving point indications. A frequency of 33½ is used; the difference from the usual 50 cycles affords protection against interference. Leakage current from outside 50-cycle circuits has been detected. Air compressors are installed at all substations and the general practice is to duplicate the pipes. The air is passed through cooling grids to extract moisture before entering the main supply pipe. Isolating cocks are provided where necessary and failures in the compressed air system are extremely rare.

Lead-sheathed cables are used throughout with special precautions against damage from stray currents. The lead sheaths must not come into contact with an earthed object, such as a water pipe, but yet must be earthed. The provision of brackets on posts and walls forms a distributed leak giving low resistance reading to earth at any point, but there is no particular path forming a low resistance connection. There are no earth plates; the sheaths are bonded throughout the railway. The bracket spacing is now 2 ft.; the compressed air main, carried on top, providing a convenient support for intermediate brackets. The latter are now designed to accommodate an exact number of cables in a layer. Underground ducts were found unsatisfactory, and concrete troughs, on the surface, are used for small cross runs. For a large number of cables crossing the line a bridge is the only satisfactory solution so far found.

With very few exceptions, the signalling cables have always been lead covered and rubber insulated. On the original installation some circuit portions consisted of multi-core cables. Although these multi-core cables were retained as individual to each signal or pair of points, and in all cases the incoming track-control lines were run in separate cables, difficulty with breakdown of the insulation of the multi-core cables was experienced quite early, and it was found that when this occurred dangerous conditions could be set up. Certain limited installations were provided with more extensive multi-core cable systems, and in these not only would a multi-core cable feed one individual signal or pair of points, but the control of several signals, pairs of points, or even incoming lines from track circuits, would be included in the same cable.

With a number of circuits in a multi-core cable without an earth screen between individual conductors, a breakdown of insulation can very easily cause false operation. It might be suggested

that constant testing of the insulation would prevent ill effects, but cases have been known where a cable with faulty insulation gave quite good insulation readings dry, and after wetting, extremely bad ones.

All the later signalling installations have individual 2-cored cables for all circuits. No cable contains more than two cores, employed for the feed and return of one circuit only. Lead sheathing provides an earth screen between the live circuit and any other circuit which could be connected through another cable. The lead sheaths are all connected to the NX side of the transformers, and immediately a fault develops in any insulation on a live circuit a direct connection between BX and NX occurs, the fuse is blown and the dangerous condition is avoided. Multi-core cables have the one advantage of cheapness, as so many circuits can be enclosed in the same lead sheath, making a cable cheaper in first cost, as well as giving some saving in the cost of cable runs and the cost of laying.

It may prove possible eventually to produce a multi-core cable made to give efficient inter-screening.

The original d.c. circuits used an earthed return, the running rail being used as the return circuit for all signalling current.

When a.c. signalling was first introduced, an all-insulated system was adopted, but it was soon realised that with this system two earth faults could give a false operation. Consequently, a system of continuous earth detection was provided at signal cabins having extensive circuits fed from the same transformer. Long experience with this detector system on many installations over a number of years and further careful consideration led to the decision to abolish earth detectors and to revert to the earthed system. Provided that care is taken to ensure the continuity of the earth connections, the system is absolutely safe and affords protection against any possible false feed through leaky insulation. The earth connection is made between the NX of the transformer secondary and the lead sheathing of the cables.

The final connection is carried out by strips of copper soldered to the sheaths, fixed by bolt-and-nut terminals; three separate strips under three separate terminals are provided, to guard against a loose connection on one or two of them.

### Relay Interlocking and Route Control Signalling

Relay interlocking was first introduced at a small signal cabin at Wood Green in 1932, where an arrangement was incorporated for control of the signalling by the train describer, making a signalman unnecessary for this duty. When the description showed that the next train was to be reversed, the points were automatically set and the train signalled into the siding. Similarly, operation of the train describer was arranged to signal the train out of the siding into its proper sequence in the service.

The first installation of route-control signalling with relay interlocking was put in at West Kensington in 1934. The

signal cabin is normally switched out and the service operates straight through, but there are occasional moves to sidings. By providing relay interlocking with remote control operated from a signal cabin about half a mile away, the signal cabin need not normally be manned. Since that time, route-control signalling with relay interlocking has been adopted in five further signal cabins. It is believed that the combination has proved of considerable help to the signalman in dealing with a close service of trains. One lever movement serves to set one or more pairs of points and clear the associated signals, thus saving lever movements. The reduced number of levers means that all those necessary are practically within reach of the signalman from his central booking position.

The relay-interlocking arrangements facilitate the operation of the frame, as although interlocked levers are still employed, they are not electrically backlocked, all locking being done on the relay-interlocking circuit. The signalman can therefore operate the appropriate levers to set up a fresh route as soon as the front of a train has passed the signal controlling the route previously set up. After the signalman has reset the levers, the passage of the first train, when it clears the appropriate track circuit, completes the circuit necessary for the points to be thrown and the signal is cleared for the new route. Thus he does not have to stand with his hand on the lever waiting to make a movement immediately the track circuit clears, but can be performing other duties, such as telephoning or entering up his register. In a recent small installation emergency point levers, originally incorporated for testing purposes, have been omitted.

Relay interlocking helps the operation of the traffic, but has the disadvantage that the circuit must of necessity be much more complicated than with individual-lever signalling. While the standard of reliability has been appreciably raised, failures may still occur occasionally, and with the more involved circuits delays to traffic tend to be longer than where a simpler system is employed. Moreover, an alteration to the circuit necessitated by variations in the track layout or additions to the signalling involves very careful workmanship and elaborate testing to ensure that no mistakes have been made.

In an endeavour to overcome these difficulties, a fresh arrangement of remote-control signalling was evolved just before the war. One small signal cabin has been brought into service, and another has been constructed. This new system is particularly adapted for the remote control of signalling from a distant signal cabin.

Alternatively, for the control of a large layout from a central signal cabin, it allows the signalling equipment to be broken up into several small units. Here a number of small signal cabins are provided, suitably located in relation to the points and signals. At each an interlocking frame is installed, with mechanical interlocking of the levers and electrical backlocking and track locking, as well as with full track-circuit control of the signalling circuits. Individual levers are employed for the signals and points, arranged to be power-operated by small electropneumatic cylinders. The whole of the controls can be concentrated in a central tower where the arrangement can be route controlled in any way desired. [See *The Railway Gazette* for October 29, 1943].

\* Abstract of paper read before the Measurements Section of the Institution of Electrical Engineers on March 17, 1944. Part I appeared in our June 23 issue.



With the opening of the extension from Archway to East Finchley, it was thought that special arrangements to ensure the observance of the speed restrictions were necessary, on account of the 15-chain curve at the bottom of a long section of 1 in 50 down-gradient, and the signals have been arranged to exercise speed control.

The system arranges for the speed to be brought down to 30 m.p.h. in two stages. Each speed-control signal is kept at danger until the train has passed over

a timing section and the speed has been registered by a time-element relay at below the required value. Immediately this happens the signal clears.

In the event of the train passing over the timing section at a speed in excess of the speed limit, the signal remains at danger and the driver is compelled to stop at it. Provision is made by a rail circuit for the signal to clear after the train has stopped, so that complete interference with traffic movements does not occur.

The trend of development in any sig-

nalling installation must be primarily to improve the safety factor of the equipment and to ensure that everything possible is done to avoid any improper working likely to cause an accident. Nevertheless, constant attention must be given to the need for improvement in the reliability in service, so that delays to traffic are reduced to the minimum. From 1921 to 1942 the failures per unit per annum have fallen from about 0.25 to about 0.05.

(Concluded)

## Using Electric Operation to Best Advantage

### *The Pennsylvania Railroad has adapted its electrified main line working to the peak demands of wartime traffic*

SOME interesting facts were given recently by Mr. J. V. B. Duer, Assistant to Vice-President, Operation, Pennsylvania Railroad, in a paper to the New York Railroad Club, concerning operation over the electrified lines of the Pennsylvania in war conditions. When the electrification plans of this company were first made, the power-station and distribution system were laid out to handle a normal traffic density over the routes electrified, with some provision for later growth. The overhead equipment was designed so that the heaviest possible train movement on any one track could be handled by the capacity available in the overhead conductors; the basis of this decision was that power supply, substations, and transmission circuits could be added to without any interference with train operation, whereas alterations to the overhead equipment, by the obstruction of construction trains at work on the lines and gaps in the conductors, might affect operation considerably. Similarly, the number of motive power units provided was based on normal traffic requirements, with a reasonable spare capacity to take care of additional traffic.

In 1939, an average pre-war year, the average load on the Pennsylvania electric lines for the 24 hr. of the day was about 100,000 kw. over the year. In the morning and evening, when the heaviest traffic was being moved, the peak hour produced a demand for about 140,000 kw.; the average was thus 71 per cent. of the peak. To handle this traffic, there was installed on locomotives and motorcars of multiple-unit, trains a total of some 900,000 kw. of motor capacity, which corresponds roughly with the h.p. exerted at the rail, whereas the power of the plant supplying the current reached a total of only 278,000 kw. Total capacity of the locomotives and motorcoaches to move the trains was thus about 3½ times the capacity of the power-stations, including spare units, to supply current. As traffic rapidly increased in 1940 and 1941, it became necessary to decide whether to build up power-plant and motor capacity to meet the demand, or by the introduction of more powerful steam locomotive power in non-electrified territory, to release some steam power to take care of the excess traffic on the electrified lines. The latter plan, which had the advantages of helping to equip the line with modern steam locomotive power, and at the same time not overburden the Pennsylvania with electric power which might be considerably in excess of the

post-war demand, was the one actually followed.

In 1943 the average electric traffic demand had risen to the peak of 1939—144,000 kw.—and the peak had increased to 200,000 kw. for an hour in the morning and evening of each day, so that average demand remained at 72 per cent. of peak demand. The continuous total motor capacity of locomotives and motorcars was now up from 900,000 to about 1,100,000 kw. Some addition had been made also to the capacity of the generating station, bringing the total up to some 306,000 kw., and in this way the previous ratio of motive power to generating capacity was still maintained. At the same time a careful balance was preserved between steam and electric locomotive building. The completion of each stage of the electrification had released a number of steam locomotives for service elsewhere, but it had since been customary, at peak periods of traffic, such as Christmas, to return some of these temporarily to the electrified area, in order that it should not be necessary to maintain an excessive total of electric power dictated only by peak conditions. To handle the peak wartime traffic, the same principle was followed, and the maximum number of steam locomotives in use in the electrified territory rose to 88 in November, 1943.

As a result of electrification, the Pennsylvania, through the full length of its electrified territory, was able to shorten passenger schedules by an average of about 1 hr., and freight schedules by 2 hr., without any increase of maximum freight speeds, and with a relatively small increase in maximum passenger train speeds, for an electric motor is able temporarily to sustain a high overload rating, which is put into service in acceleration from rest and on adverse gradients. With the continuous braking used on all freight trains the acceleration of the freight service so made possible over the densely-occupied electrified main lines of the Pennsylvania, and the greater reliability of the electric locomotives, has permitted the operating authorities to sandwich freight trains between the very fast passenger services without interfering with the latter. The 60,000 gross ton-miles per freight train-hr. obtained with steam on the Pennsylvania has been increased to as much as 70,000 gross ton-miles with electric haulage. The electric locomotives make an annual mileage about 25 per cent. greater, in similar service, than steam locomotives.

One factor which has considerably influenced the success of the Pennsylvania electrification has been the attention paid to the training of the staff. As far back as 1919 a programme was begun of educating the mechanical officers of the railway, and those with immediate charge of electrification, in the fundamentals of electric operation. In 1929 this education was extended to the rest of the personnel, with the result that the Pennsylvania now has a number of Superintendents, several General Superintendents, and a General Manager all intimately acquainted with electric problems. Thus the handling of electric matters has now become a routine task for the management rather than a technical question for experts only.

**BULLE-ROMONT ELECTRIFICATION.**—It is reported that, if satisfactory financial arrangements can be made, the work of electrifying the standard-gauge Bulle-Romont line (Switzerland), one of the constituents of the recently-formed Chemins de fer Fribourgeois Gruyère-Fribourg-Morat, will be commenced shortly. It is hoped that conversion may be complete early in 1947. The line, which is about 18 km. (11 miles) long, is shown on the map published in our March 3 issue, page 217.

**NEW ELECTRIC ROLLING STOCK IN SWITZERLAND.**—The Swiss Federal Railways placed in service last May the first of six lightweight dining cars, ordered from the Schlieren Carriage Works, to provide adequate restaurant facilities on the fast lightweight electric trains which operate between the principal cities on the Geneva-Lausanne-Berne-Zürich, Geneva-Lausanne-Neuchâtel-Basle, and Basle-Lucerne-Lugano-Chiasso routes. The first of eight composite first and second class coaches, ordered from the Swiss Industrial Company, Neuhausen, also for service with the lightweight expresses, has been placed in operation, on the Basle-Chiasso route. On the Montreux-Oberland Bernois Railway, the first of a new type of lightweight electric motor-coaches for the Montreux-Zweisimmen line has been placed in service. The electrical equipment has been supplied by Brown-Boveri, and the mechanical portion by the Swiss Industrial Company.

**CORRESPONDENCE FILES.**—Recently we have examined and destroyed many files of correspondence to provide paper for salvage. We regret any inconvenience which this may cause, but would remind readers that action of this kind is a direct contribution to the war effort and should be taken by all industrial undertakings.

## New L.N.E.R. Locomotive Depot in the North East

*A building erected in 1841 has been rebuilt and considerably extended in conformity with best modern practice*



**A** LOCOMOTIVE depot built originally in 1841 by the former Stockton & Darlington Railway recently has been renewed completely by the L.N.E.R. The work has entailed the demolition of the whole of the main shed and repair shops to make way for the erection of a new machine shop, engine shed, and stores, and the only original building to remain untouched is a subsidiary round engine shed used for stabling small type and pilot engines. This small round shed was located clear of the ground required

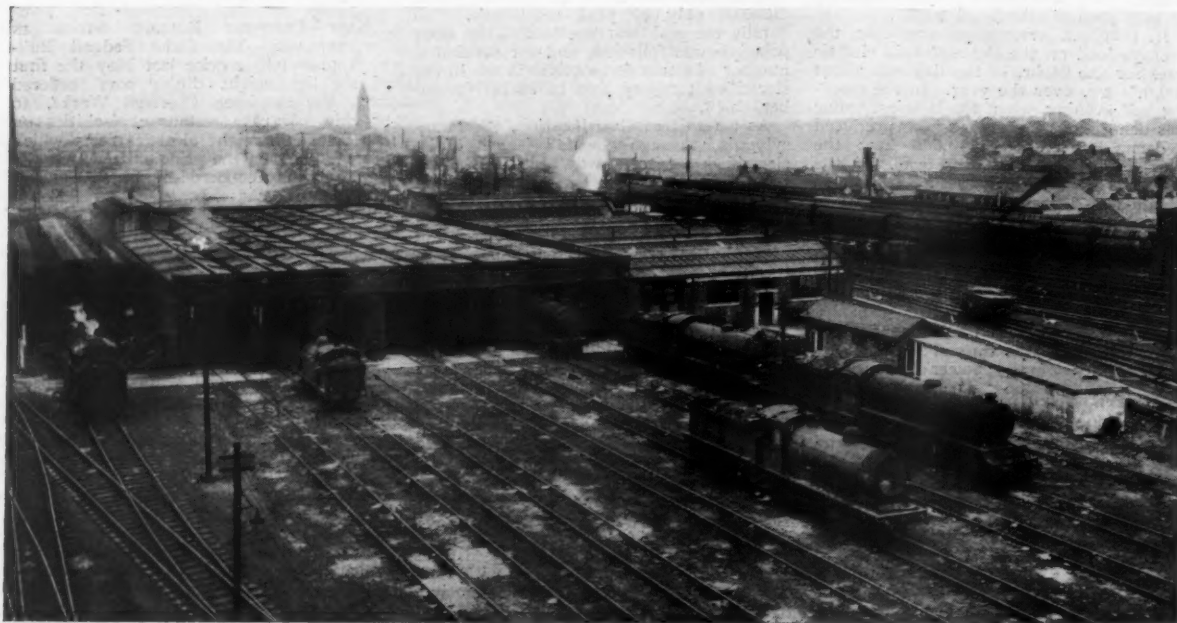
for the principal alterations to the depot layout.

The new main locomotive shed, capable of housing 21 tender engines of the largest type, contains 7 through tracks. It is 221 ft. long with a steel roof in a series of flat pitches, one over each track with a continuous open smoke-duct at the apex, which is formed by two longitudinal girders positioned equidistant from the centre of each track, and attached to cross girders at 55 ft. 4½ in. centres, which span the shed over two

intermediate stanchions, thus giving a maximum uninterrupted floor space combined with economical steel distribution. The open smoke-duct is formed by lining the inner portion of each longitudinal girder with flat asbestos sheets. The roof is covered with corrugated asbestos sheets and patent glazing. Hinged doors are fitted to the north end of the shed, but the entrance at the south end is left open. Engine pits are provided on all 7 tracks.

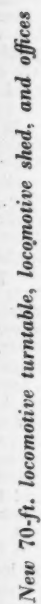
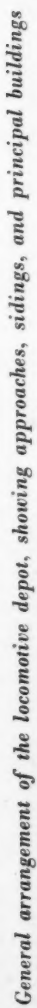
On the west side of the running shed is the new 68-ft. wide machine shop, which is provided with all the necessary machinery to carry out repairs to engines in traffic and includes heavy and light lathes, drills, etc., and an electrically-driven engine-wheel drop capable of handling wheels from the largest locomotives. An overhead electric hoist runs around the machine shop to facilitate the lifting and moving of the heavy engine parts, including the lifting of wheels clear of the wheel drops. In an adjoining siding accommodation is provided for the 45-ton steam breakdown-crane and tool vans. At the south end of this machine shop a well-equipped joiners' shop is located and accommodation provided for the steamraisers and their equipment. The west elevation, which faces the main line, is treated on simple lines, and is principally of brick with a deep concrete string picking up the window lintel and a flat concrete coping. Buttresses are introduced to break up the plain surface and, incidentally, to encase the main stanchions. The portion housing the wheel-drop is taken higher than the remainder and is treated as a feature. All the windows are of the standard metal factory type. The roof design is a series of intermediate pitched trusses, supported on cantilever trusses from a main frames cross girder. The cross girders serve the dual purpose of supporting the roof cantilevers and overhead travelling crane track.

On the east side of the running shed is the general stores building, 175 ft. long and 28 ft. 3 in. wide, with wagon



*The new engine shed viewed from the cooling plant*





access at the north end and a staff locker room at the south end. The roof construction is of the rigid frame type with frames at 13 ft. 2½ in. centres. Between the locker room and the stores is the issuing lobby. Although all the roofs are covered with corrugated asbestos sheeting and glazing, and are either of the pitched or lean-to type, most of the walls are carried up as parapets concealing the roof lines, which conveys the impression of a flat-roofed building.

In the locomotive depot yard the old-fashioned coaling stage was removed after the erection of a new mechanical coaling plant of 250 tons bunker capacity. This plant has many novel features and is capable of delivering coal from two separate bunkers so that the higher grades of coal may be reserved for particular purposes. This coal selection is not of special use under present war conditions, but it should prove advantageous when peace returns. The 60-ft. diameter manually-operated turntable was replaced by a 70-ft. diameter vacuum power-operated turntable and track alterations and facilities were added to make possible the speedy and unrestricted flow of engines through the necessary disposal and preparation duties. Additional engine pits were provided, and the layout was designed to facilitate extension.

A wet ashpit of reinforced concrete, 210 ft. long and accommodating two lines of locomotives is provided for the easier preparation of engines. This pit has continuous sloping sides, and travelling

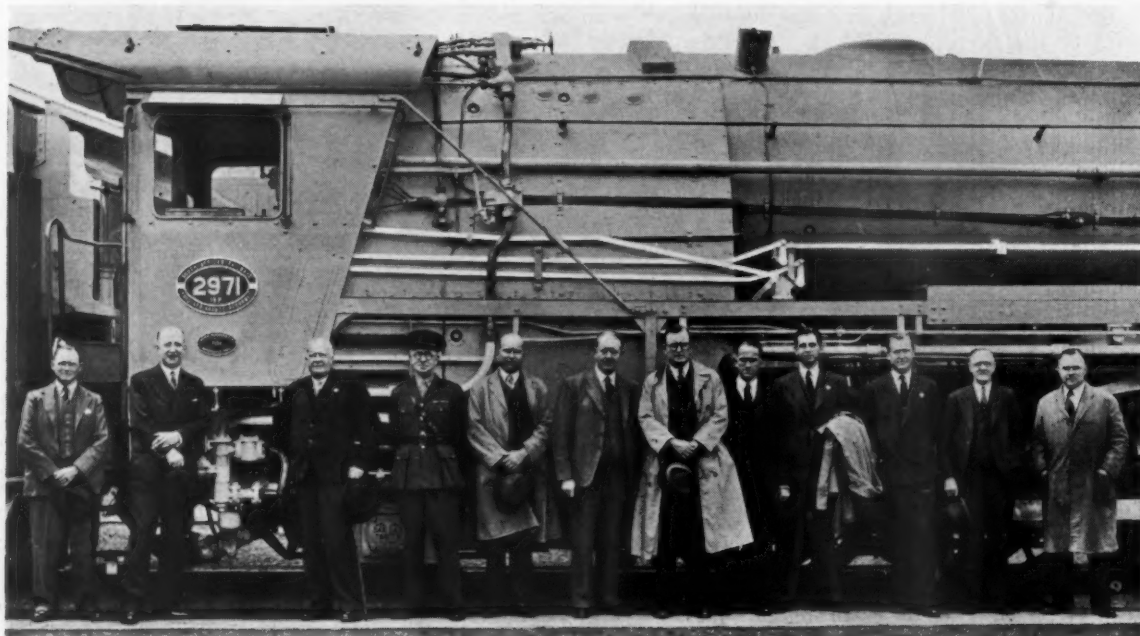


General view of the interior of engine shed

cages are fitted on light section rails in the 4-ft. ways for the use of the "fire dropper." The pit is emptied once a week; the wet ash is lifted out by a crane and grab, and loaded into wagons in an adjacent siding constructed to drain away surplus water.

The office block housing the adminis-

trative staff, mess rooms, time office, etc., is situated east of the locomotive shed and is built of brick, with a pitched, slated roof; the windows are standard type steel sashes. It is centrally heated and large round-end bays are provided at each end of the building, to facilitate observation.



Reproduction of a photograph taken on the occasion of a visit on June 29 of the High Commissioner for the Union of South Africa to the Manchester works of Beyer, Peacock & Co. Ltd.

Left to right: Mr. J. Hadfield, M.B.E., Technical Manager, Beyer, Peacock & Co. Ltd.; Mr. H. Wilmot, Managing Director, Beyer, Peacock & Co. Ltd.; Colonel the Hon. Deneys Reitz, High Commissioner for the Union of South Africa; Brigadier A. W. Griffin, Director, Royal Engineer Equipment, Ministry of Supply; Messrs. W. H. Maass, Acting Advisory Engineer, Office of the High Commissioner for the Union of South Africa; W. Cyril Williams, Sales Director, Beyer, Peacock & Co. Ltd.; E. D. Scallan, Secretary, Office of the High Commissioner for the Union of South Africa; L. T. Dawes, Secretary, Beyer, Peacock & Co. Ltd.; C. H. Taljaard, Private Secretary to the High Commissioner for the Union of South Africa; Julian Mockford, Public Relations Officer, South Africa House; F. Wilde, Works Superintendent, Beyer, Peacock & Co. Ltd.; E. D. Westlake, Resident Inspector to Advisory Engineer, South Africa House



## RAILWAY NEWS SECTION

## PERSONAL

We regret to record the death on July 14, at the age of 57, of Lt.-Colonel the Rt. Hon. Lord Somers, K.C.M.G., D.S.O., M.C., D.L., a Director of the Great Western Railway Company since 1941.

Captain A. R. S. Nutting, O.B.E., M.C., has been appointed Chairman of the Westinghouse Brake & Signal Co. Ltd., in place of the late Lord Herbert Scott. Captain Nutting is Vice-Chairman of Coast Lines Limited and a Director of other companies.

We regret to record the death on July 3 of Mr. Robert Rodgers Stewart, who from 1903 was Secretary & Accountant (in 1923 the title of General Manager was added to that of Secretary & Accountant) of the Cavan & Leitrim Railway Company. He retired when the company was absorbed by the Great Southern Railways Company (Eire) as from January 1, 1925.

The Council of the Institute of Welding has awarded the Sir William J. Larke Medal for 1944, together with a first prize of £50, to Mr. H. W. Clark, for a paper entitled "Some Applications of Arc Welding, Embodying Specific Details of Welded Work." Mr. Clark is Assistant Engineer (Bridges & Structures), London Passenger Transport Board.

## SOUTHERN RAILWAY APPOINTMENTS

The Southern Railway announces the following appointments in the Chief Civil Engineer's Department with effect from July 1:—

Mr. R. Restall, Assistant Divisional Engineer, London West Division, to be Production Assistant to Maintenance Engineer.

Mr. L. S. Furnivall, Permanent Way Assistant, to be Assistant Divisional Engineer, London West Division.

Mr. L. G. B. Rock, Acting Assistant Engineer (General), to be Permanent Way Assistant to Maintenance Engineer.

We regret to learn of the death in April last, aged 60, of Mr. Charles MacGregor, who represented one of the links between signalling in Great Britain and the U.S.A. He was connected with the Johnson family, prominent in signal engineering in both countries, and originally was in the service of the once well-known firm of Stevens & Sons, of Southwark. He went to America in 1905 and saw service with several manufacturing concerns and railway companies, as a draughtsman and circuit designer, and became in 1927 Office Engineer in the Signal Department of the Interborough Rapid Transit Company of New York. He left that company in 1929, and was placed in charge of the work on the 8th Avenue Subway for the Board of Transportation; in 1938 he became its General Supervisor of Signals & Telephones. Mr. MacGregor held the title of Electrical Engineer (Railway Signals) at the time of his death.

Colonel Norman A. Ryan, Chief of Military Railways Division, U.S.A. Army Transportation Corps, European Theatre of Operations, has been awarded the Legion of Merit for "exceptionally meritorious conduct in the performance of outstanding duties." Colonel Ryan is a veteran of the Railway Transportation Corps of the war of 1914-18; he entered the corps as a Private in 1918, and left as a First Lieutenant in 1919, after seeing service with the American Expeditionary Force. During the present war, he has been on duty at headquarters, European Theatre of Operations, as Assis-



Colonel Norman A. Ryan

Assistant Chief of Transportation & Chief of Military Railways Division, U.S.A. Army Transportation Corps (E.T.O.), who has been awarded the Legion of Merit

tant Chief of Transportation & Chief of the Military Railways Division since May 26, 1942. He was commissioned as a Colonel in the Engineer Corps Reserve on October 1, 1939, shortly after his appointment as General Manager (Lines West), Chicago, Milwaukee, St. Paul & Pacific Railroad, which position he held at the time of his call to active duty in May, 1942. Colonel Ryan was born in 1891 and entered railway service in 1909 in the Operating Department of the Chicago, Burlington & Quincy Railroad. Later he served with the Southern Pacific before returning to the Chicago, Burlington & Quincy Railroad; in 1917 he joined the Los Angeles & Salt Lake Railroad. On returning from military service, he joined the Chicago, Milwaukee, St. Paul & Pacific Railroad, of which eventually he became General Manager (Lines West). When he assumed his post as Assistant

Chief of Transportation & Chief of the Military Railways Division in May, 1942, he had to prepare for co-ordination with the British railways, and to plan for the construction, assembly and repair of locomotives and freight vehicles. It was necessary to make an extended survey of the facilities and installations available in the United Kingdom, to secure equipment for the shops, to apportion the equipment among the Transportation Corps operating and shop battalions, and to organise production and operating schedules. One difficulty encountered at the outset was the plan to use 40-ton box wagons, which would not have been suitable for British lines. Colonel Ryan conferred with his colleagues, and they designed and produced a 20-ton freight vehicle which would meet all demands. Later he was called on to assist the Marine Operations Division of the Transportation Corps with construction and conversion work; by his planning, the marine schedule was carried out and railway construction was maintained ahead of schedule. It is for the successful handling of all these problems that Colonel Ryan has been awarded the Legion of Merit.

(See editorial note, page 53)

Señor Eduardo I. Rumbo, who on May 30 was appointed Interventor in the Argentine National Railway Board, was born in Buenos Aires in 1906. He joined the Argentine Navy, from which he resigned in 1929 with the rank of *Alférez de Fragata*. In 1935 he obtained his degree of Civil Engineer at the University of La Plata, and has since travelled extensively throughout northern Argentina, especially in the provinces of Santiago del Estero and Catamarca, in connection with private concerns. More recently he has been attached to the State Oilfields Board as Economic Adviser. Señor Rumbo has written extensively for scientific publications, and has carried out translations from English into Spanish.

We regret to record the death on July 14, at the age of 87, of Sir Joseph Guinness Broodbank, who was a member, appointed by the Board of Trade, of the Port of London Authority, and Chairman of the Dock & Warehouse Committee, from 1909 until his retirement from the Authority in 1920. He was President of the Institute of Transport for 1923-24; a member of the Dock Rates Advisory Committee of the Ministry of Transport from 1922 to 1934; and a member of the Port & Transit Executive Committee from 1915 to 1922. He had also been Technical Adviser to the Committee of Transport of the League of Nations. Sir Joseph Broodbank was knighted in 1917.

We regret to record the death on June 19, in Felixstowe Hospital, after a sudden illness, of Mr. Harry Nichols, aged 65, who retired in 1939 from the post of Stationmaster, Maidenhead, Great Western Railway. The official records of the company state that he measured 6 ft. 6 in. in height, and was the tallest stationmaster in the G.W.R. service

Mr. W. Woodbine Parish has been elected Chairman of Consolidated Waterworks of Rosario Limited, Monte Video Waterworks Co. Ltd., and Rosario Drainage Co. Ltd., in place of the late Mr. Norman B. Dickson. Mr. Parish is Chairman of the Vulcan Foundry Limited and is on the boards of the Taltal Railway Co. Ltd. and other companies.

We regret to record the deaths through enemy action of Mr. I. de Wynter and Mr. J. L. Roberts, both of whom were Sales Engineers attached to the London Office staff of British Insulated Cables Limited.

We regret that, in the biography last week of Mr. A. B. Potter, lately Assistant for Road Transport to the Traffic Manager, Southern Railway, it was stated that in 1928 he became Outdoor Commercial Superintendent. Mr. Potter was from 1917 to 1928 Outdoor Representative to the Superintendent of the Line and to the Outdoor Commercial Superintendent.

#### Mr. Frank Dudley Docker

Mr. Frank Dudley Docker, C.B., whose death we recorded last week, was an outstanding industrialist, many of whose activities were closely related to the railway industries. He was born in 1862, and was educated at King Edward's School, Birmingham. He prepared for a legal career, but at the age of twenty-two he instead entered commerce by joining his brothers in establishing a varnish and paint business in Birmingham, which later was converted into a limited company with the title of Docker Bros. Ltd. Subsequently Mr. Docker was responsible for the first large amalgamation of railway carriage and wagon building companies. Under the name of Metropolitan Amalgamated Railway Carriage & Wagon Co. Ltd., in 1902, a number of firms was welded, including the Metropolitan Wagon Company; Brown, Marshall & Company; the Ashbury Railway Carriage Co. Ltd.; the Lancaster Railway Carriage Co. Ltd.; and the Oldbury Railway Carriage Company. Afterwards Docker Bros. Ltd. and the Patent Shaft & Axletree Co. Ltd. were acquired. At a later period the activities of the company were extended and its title became the Metropolitan Carriage, Wagon & Finance Co. Ltd.; and that concern, under Mr. Docker's Chairmanship, was responsible for virtually the whole output of tanks, as well as much other material, during the war of 1914-18. At the end of 1919 the company was amalgamated with Vickers Limited, of which he became a Director; he retained his seats on the boards of the Metropolitan Carriage, Wagon & Finance Co. Ltd. and the Patent Shaft & Axletree Co. Ltd. About six months later, however, due to ill-health, he was compelled to relinquish all these positions; but he continued to act as Managing Director of Docker Bros. Ltd. Subsequently there was a further fusion, with Cammell Laird; and the outcome was the present company, the Metropolitan-Cammell Carriage & Wagon Co. Ltd., which is jointly owned by Vickers Limited and Cammell Laird &

Co. Ltd. Mr. Docker was, at the time of his death, a Director of the Midland Bank Limited and the Birmingham Small Arms Co. Ltd.; Chairman of the Electric & Railway Finance Corporation Limited; and a Vice-President of the Federation of British Industries, of which he was one of the founders and was the first President. In 1921 he became a Director of the London, Brighton & South Coast Railway Company, and continued as a Director of the Southern Railway Company until

Mr. W. G. Brown, due to ill-health, has relinquished his appointment as Chief Designer of the Gloucester Railway Carriage & Wagon Co. Ltd.

We regret to record the death on July 10, at the age of 83, of Mr. John Montague Spencer-Stanhope, a Director and a Trustee (and formerly for many years Chairman) of the Aire & Calder Navigation.



*The late Mr. Frank Dudley Docker*  
Founder of the Metropolitan Amalgamated Railway Carriage & Wagon Co. Ltd.

1938. He was also a former Director of the Metropolitan Railway Company. Mr. Docker was made C.B. in 1911.

#### AN APPRECIATION

Sir Guy Locock, Director of the Federation of British Industries, writes:—

Nowhere can there have been greater regret at the death of Mr. Frank Dudley Docker, C.B., than at the F.B.I., of which he was founder and first President. Mr. Docker can rightly be called the "father" of the Federation, since it was owing to his initiative and his belief that there was needed a central industrial organisation enabling industry to make known its views that the Federation came into existence in 1916. During the past 28 years, Mr. Docker's co-operation, wide experience, and assistance have been of inestimable benefit to the Federation, which has sustained a serious loss in his death. To those who knew him in a personal capacity, the loss is a double one.

Mr. J. E. Binks has been elected President of the National Union of Railwaymen in succession to Mr. F. J. Burrows.

#### L.M.S.R. APPOINTMENTS

The L.M.S.R. announces the following appointments:—

Mr. C. Anstall, Goods Agent, St. Pancras & Somers Town, to be Goods Station Working & Cartage Assistant, Operating Manager's Office, Glasgow, *vice* Mr. G. A. Gribble, promoted.

Mr. A. R. Thomson, District Controller, Liverpool (Lime Street), to be District Controller, Birmingham, *vice* Mr. W. B. Shelton, promoted.

Mr. L. W. Cox, Head Office Inspector (Accidents & Accommodation), Office of Divisional Superintendent of Operation, Crewe, to be District Controller, Liverpool (Lime Street).

Mr. C. W. Jones, Goods Agent, Lawley Street, to be Goods Agent, St. Pancras & Somers Town.

Mr. R. H. Wilson, Goods Agent, Curzon Street, to be Goods Agent, Lawley Street.

Mr. W. Hall, Cartage Assistant, District Goods Manager's Office, Birmingham, to be Goods Agent, Curzon Street.

Mr. V. P. Boyle, Goods Agent, Coventry, to be Cartage Assistant, District Goods Manager's Office, Birmingham.

Mr. T. Tinning, Stationmaster, Glasgow (St. Enoch), to be Stationmaster, Glasgow (Central), *vice* Mr. J. Rankin, retiring.

Mr. I. McCleary, Stationmaster, Glasgow (Buchanan Street), to be Stationmaster, Glasgow (St. Enoch).

Mr. D. Balfour, Stationmaster & Goods Agent, Larbert, to be Stationmaster, Glasgow (Buchanan Street).

Mr. I. E. Preston, Head Office Inspector (Staff), C.C. & C.O.M., Derby (located at Euston), to be Stationmaster, Willesden, *vice* Mr. A. G. Mann, retiring.

Mr. P. G. Gadd, Head Office Inspector (Staff), C.C. & C.O.M., Derby, to be Stationmaster, Bedford (Midland Road), also in charge of Bedford (St. Johns), *vice* Mr. J. L. Woodcraft, retiring.

Mr. R. A. Norrish, Chief Clerk, Lawley Street, to be Goods Agent, Coventry, *vice* Mr. V. P. Boyle, promoted.

Mr. G. O. Chubb, Goods Agent, Mansfield, to be Goods Agent, Chesterfield, *vice* Mr. J. Burnley, retired.

Mr. R. Little, Stationmaster & Goods Agent, Tutbury, to be Stationmaster & Goods Agent, Leek, *vice* Mr. J. M. Jones, retiring.

Mr. J. Hillhouse, Livestock Representative, Commercial Manager's Office, Glasgow, to be District Traffic Agent, Dundee, *vice* Mr. D. Blooman, retired.

Mr. A. E. Matthews, Telegraph Inspector, Signal & Telegraph Engineer's Department, Rugby, to be Area Technical Assistant, Signal & Telegraph Engineer's Department, Rugby, *vice* Mr. J. H. Mottram, retired.



## TRANSPORT SERVICES AND THE WAR—251

### L.M.S.R. Station Closure

Stansfield Hall Station, L.M.S.R., which deals only with passengers, will be closed as a wartime measure on and from Monday, July 31. Alternative road services are available to and from Todmorden.

### Groundwork for Bomber Command

No fewer than 91 special trains, carrying 42,000 tons of tarmacadam and cement for airfields, were run every week by the L.M.S.R. during the winter and spring. Most of this material was for resurfacing and extending aerodrome runways to enable aircraft to take heavier bomb loads.

### Furniture Removal Ban Lifted

Until further notice, road transport may be used in London and other areas of Southern England affected by enemy action for the removal of furniture to places more than 60 miles distant. For bombed-out residents, no special permit from the Regional Transport Commissioner is necessary.

### London Transport and the Fly Bomb

The following letter from Lord Ashfield, Chairman of the London Passenger Transport Board, to the staff was posted on notice boards at all stations, garages, depots, works, and offices on July 8:—

"General Notice No. 88.

"To All Staff of London Transport.

"At a meeting of the Board held on Thursday, July 6, the General Manager, Mr. T. E. Thomas, reported that since the commencement of the enemy attack by flying bombs there had been casualties among the staff and damage to some of the Board's premises and vehicles. In spite of this, the Board's services, both rail and road, were being adequately maintained. He also reported that all members of the staff in every department had carried out their duties without regard to their own personal comfort and with the greatest possible efficiency and cheerfulness. He stated that he could not speak too highly of their conduct during these very trying and difficult conditions.

"The Board desired to express their deepest sympathy to those members of the staff and their families who have sustained injury and loss.

"The Board noted with pride and satisfaction the conduct of their staff and instructed that it be inserted in the records of the meeting. It was the wish of the Board I should convey to all members of the staff our very sincere thanks and appreciation for their splendid response to the exceptional demands which have fallen upon them in the discharge of their respective duties and which has given an assurance that they will not fail the people of London."

### British Railway Diesels in War

The British railways today own 89 diesel units, comprising 45 diesel-electric shunting locomotives, 4 diesel-mechanical locomotives, 39 railcars, and 1 three-car train unit. With the exception of the three-car train unit, which is not now in service, these diesel units are playing an important part in the movement of war traffic. There are 9 diesel-electric shunting engines and 1 diesel-mechanical locomotive on loan to Government Departments and industry, and the remaining 3 diesel-mechanical units have been converted into mobile generator sets. The balance of 36 diesel-electric locomotives, in railway service, are employed mainly on shunting operations in important marshalling yards and traffic sidings in various parts of the

country. The 39 railcars are engaged on passenger and parcels service, and in certain instances are operating special services for the conveyance of workers to Government factories.

Since September, 1939, more than 20 diesel locomotives have been transferred by the British railways to the War Department, and many of these have been sent overseas. Some difficulty was experienced in the Western Desert, where the diesel engines were affected by sand. To overcome this trouble, samples of sand were flown to this country to enable experiments to be made under conditions as near to actual desert conditions as possible. Extensive use was made of the wind tunnel in the railway laboratory at Derby, where miniature sand storms can be created at will. As a result of these experiments, a filter was designed which was so successful that it was adapted for use on tanks operating with the 8th Army.

### Coastal Ban Partly Raised

From July 12 access is permitted to the Protected Areas in Cornwall, Devon, and Dorset, and to a part of Hampshire consisting of Bournemouth, Christchurch, and the rural district of Ringwood & Fordingbridge. For operational reasons the ban on the rest of the areas originally scheduled from April 1 is being maintained, but the Government has decided that permission to enter such areas be extended to persons evacuated from London and certain other areas of southern England under organised arrangements, namely, unaccompanied schoolchildren, mothers with children under five, and expectant mothers; and aged, infirm, and blind persons holding certificates issued by local authorities in evacuable areas, but evacuating under private arrangements. The areas affected by the relaxation remain Regulated Areas and the by-laws requiring the carrying of identity cards and prohibiting the use of telescopes and binoculars without a permit remain in force.

### German Travel Ban

A German Decree, announced by radio, prohibits all travel in the Reich (presumably excluding suburban travel) from Monday last, July 17, excepting by special permit.

### Concrete Sleepers in Switzerland

When the budget of the Swiss Federal Railways for 1944 was presented, it was stated that the administration had been able to save approximately 20,000,000 Swiss francs annually by the use of concrete sleepers.

### More Trains in Eire

It was announced officially in Dublin on July 13 that a limited number of railway and other transport services is being restored, at least temporarily. From Monday last, July 17, on the lines of the Great Southern Railways, there is now one passenger train each way on four days of the week instead of on two days a week as heretofore.

### Goods Ownership and the Belgian Railways

An Order concerning private goods traffic on the Belgian National Railways, issued by the German Military Commander for Belgium and Northern France, and effective from April 15, contained new regulations for the transfer of ownership of consignments of goods entrusted to the railways. The German Military Commander is entitled to order the handing over to recipients named by him of such consignments of goods as cannot be con-

veyed because of *force majeure* arising through no fault of the railways. The transfer does not require consent of the original owner. The new recipient is considered the rightful buyer, and is thus required to pay to the owner the price originally agreed between him and the original buyer.

### Malmö-Copenhagen

The Swedish train ferry service between Malmö and Copenhagen was suspended entirely from Monday, July 3.

### Goods Services of Zurich Trams

The first goods services to be operated by the Zurich Tramways (a municipal undertaking) were instituted in 1941, mainly with a view to alleviating the serious food distribution situation resulting from shortage of motor fuel and tyres. These services were worked between fixed points, for the benefit of important fruit and allied trades wholesalers, outside the peak hours, namely, between 8 a.m. and 12 noon, and between 2 and 5 p.m. The services are still maintained, but now during morning hours only.

### Budapest Local Traffic

Most of the remaining Budapest bus services were discontinued on November 8 last, by reason of tyre shortage, and it is stated that only 90 vehicles out of the fleet of 360 buses owned by the Budapest Transport Company (BSzKRT) are now in service. A further 28 are at work with flanged wheels to run on tram tracks, as mentioned in our issue of June 12, 1942 (page 658), but these are unpopular because of their noise and vibration.

The number of tram passengers carried on the system in 1943 rose to 567,000,000, compared with 465,000,000 in 1942, an increase of 22 per cent.

### The Fijian Railway

A little-known railway which is making its contribution to the war effort in the Pacific Zone is the Fijian Railway, owned by the Colonial Sugar Refining Company. It is composed of four isolated systems, one on Vanua Levu, the second largest island in the Fiji group, and three on Viti Levu, the main island. The main system, on Viti Levu, is about 120 miles long, excluding branches, and the other three are scattered short lines. We are indebted to a correspondent for informing us that the main system extends round the coast from Tavua, to Singatoka, via Mba, Lautoka, and Nandi, with numerous branches; the latter, however, are mainly temporary, laid down only in the sugar-cane season. It is built to the 2-ft. gauge, and has neither stations nor signalling. Goods traffic is worked by an assortment of 0-6-0 tender locomotives, with a few 0-6-2 tanks, most of Hudswell Clarke build. Passengers often ride on the goods trains, but regular passenger traffic is maintained by a 4-4-0 tender engine, of 1915 vintage, which hauls a train of carriages at 10 m.p.h., including stops. The train is not luxurious, and carries passengers free, in accordance with an agreement between the Colonial Sugar Refining Company and the Government of Fiji, whereby the company secured its land for the railway at a low rent in return for the obligation to convey passengers without charge. There is no Sunday passenger service, but on weekdays the free train leads a busy life. On Monday it leaves Lautoka for Tavua, a distance of about 45 miles, and returns in the evening; this run takes 4 hr. each way. On Tuesday, it leaves Lautoka for Singatoka, covering the 80 miles in 8 hr. and then runs up the Singatoka River for 10 miles in 1 hr. There it spends the night, and early next morning sets off for Lautoka, which it reaches in 9 hr. On Thursday, the train makes the

trip to and from Tavua, and on Friday-Saturday that to and from Singatoka. The track is in a poor state because of war conditions. The line keeps to the coast for most of the way, and engineering works are practically nil, although bridges across the streams and rivers are frequent. The scenery is generally attractive, with mountains on one side and the sea on the other, but in places the line crosses mangrove swamps.

#### Petrol Shortage in Mexico

Lack of railway tank wagon facilities is stated to be the cause of an acute shortage of petrol in San Luis Potosi, Mexico.

#### Japanese Railway in China

An industrial light railway is reported to have been opened in January last by the Japanese in the Honan Province of China, to serve the Hung Shan iron-ore mine, west of Wuan, in the extreme northern part of the province.

#### Brazil-Paraguay Rail Link

It is reported from Brazil that considerable progress is being made on the extension of the San Paulo-Parana Railway to the Paraguayan border. This railway was recently taken over by the State.

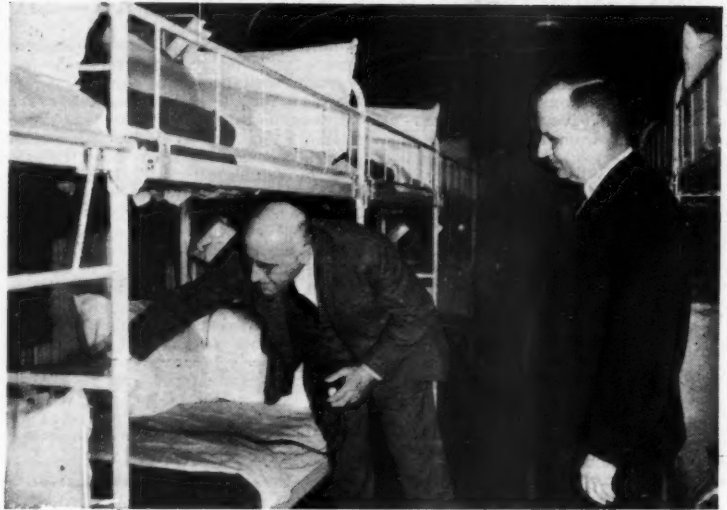
Another Brazilian railway approaching the Paraguayan frontier is the branch of the North-Eastern Railway from Campo Grande. The 96-mile section between Campo Grande and Maracaju is said to be complete, and to have been inaugurated on April 25, with six intermediate stations and a temporary terminus at Maracaju.

#### Hotter American Travel

It has been forecast by Brigadier-General C. D. Young, acting Director of the United States Office of Defense Transportation, that the average of American passenger travel this summer is likely to be considerably hotter than for many years past. The reason is the shortage of freon, a chemical refrigerant used in air-conditioning plants. War demands for this product, which is needed, among other things, for killing mosquitos in malarial countries, has reduced the quantity available for civilian use, the railways included, and although additional supplies are likely to be available later in the year, the summer need will then be past. Out of the total of roughly 8,000 air-conditioned cars in the United States, 4,600 are permanently sealed, with windows which cannot be opened, and these will have the first call on such supplies of freon as are available; the probability is that the majority of the cars which have opening windows will have to go without refrigeration this summer.

#### U.S.A. Women Railway Labour

By mid-January last, the total number of women employees on United States railways had risen to 105,901, a further increase of 2,692 in three months; this total was 7.80 per cent. of the total number of employees, compared with 4.79 per cent. in January, 1943. In train and engine service the number had risen to 250, against 4 a year earlier; in the division that includes yardmasters, switchtenders, and hostlers, in which no women were reported in 1943, the number in mid-January was 34. In transport service other than train, engine, and yard, the increase was from 4,843 in 1943 to 11,273 in 1944; in the maintenance of equipment and stores from 9,439 to 21,545; and in the maintenance of way and structures from 745 to 2,402. The largest number of women in railway employ, of course, is in the clerical grades, and here the increase was from 48,138 to 70,379. Assistant



Colonel the Hon. J. L. Ralston, Canadian Minister of National Defence, inspecting and accepting delivery on May 18, of the fourth hospital car built by the Canadian National Railways

travelling passenger conductors and collectors increased from 91 to 140, but the number listed as travelling passenger brakemen and flagmen decreased from 111 to 90, continuing the trend of the previous quarter; also the number of women yard brakemen and helpers diminished from 25 to 16. Women clerk-telegraphers and telephoners increased from 1,204 to 1,321, and telegraphers, telephoners, and towermen (signalmen) similarly from 1,458 to 1,639. Baggage, parcel room, and station attendants were larger in numbers, at 1,574 against 1,384, but truckers in stations and warehouses and on platforms diminished from 1,860 to 1,743. It would appear from the few decreases that in these categories the work has proved too hard or unattractive, but the increases in many other categories are striking in their extent.

#### Telephones for Servicemen

At Camden Station, Baltimore, a telephone exchange has been opened for the exclusive use of men and women in the Armed Forces, adjacent to the popular canteen established by the Baltimore & Ohio Railroad for service men and women in the station premises. The new exchange adds one further to the twelve which have been opened by the Chesapeake & Potomac Telephone Company in Maryland specially to handle service calls from nine camp reservations in that state, and three nearby cities. The new Camden Station exchange was opened by Col. R. B. White, President of the B. & O.R., and the telephone company arranged, as a pleasant surprise for the President, that the first call put through the exchange was one to Col. White from his son, Captain Roy B. White, stationed at Camp Gruber, Oklahoma.

#### New Type Canadian Hospital Car

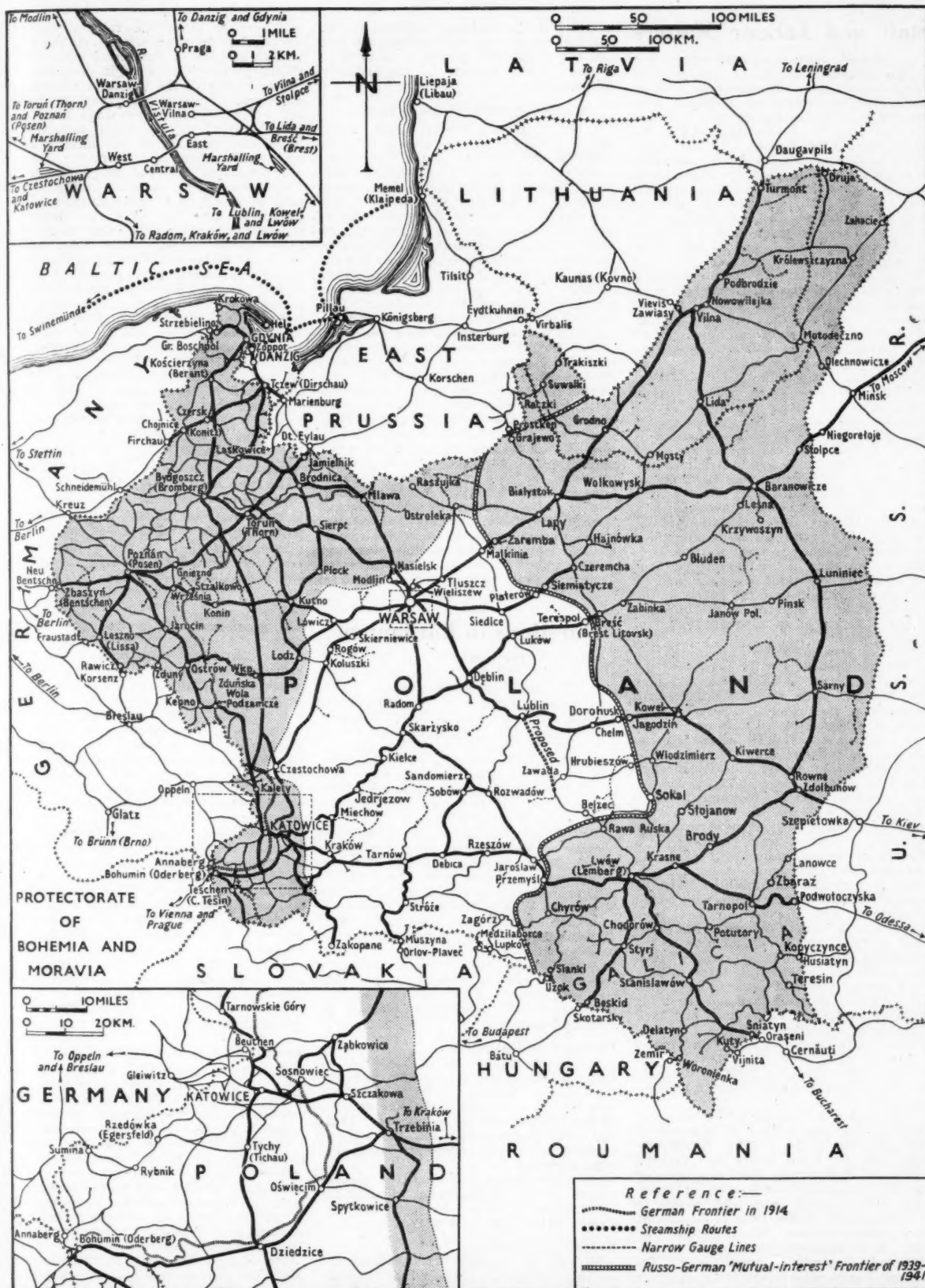
A new hospital ward car turned out by the Canadian National Railways has accommodation for 28 and is air conditioned. Improvements developed in the construction of the three previous Canadian National hospital cars have been included in the new vehicle, and several new features have been introduced, the principal of which are the re-designing of the admitting room and the dispensary or utility room. Additional space has been provided for the storage of

extra linen and equipment. Another feature of the car is the instantaneous availability of hot water, made possible by an improved circulating system just developed by the mechanical department of the railway. This installation will also conserve considerable quantities of water. The exterior of the car has been built within international clearance limits, and thus can work over the lines of any standard-gauge railway on the American continent.

#### Heavy Traffic in Nicaragua

The Pacific Railway of Nicaragua (also called the National Railway) is a 3-ft. 6-in. gauge line providing a link in the chain of communications down the west coast of Central America which is being called upon to handle heavy war traffic. It was briefly described, with a map, in our issue of April 30, 1943 (page 435). An unofficial report from Nicaragua states that approximately 7,500,000 ton-km. of goods were carried on the system during the six months ended December 31, 1943, compared with 6,600,000 hauled during the six-month period ended December 31, 1942, and 10,000,000 transported during the six-month period ended June 30, 1943. On the last-named date, the end of the latest financial year, the railway was operating 380 km. (236 miles) of line, compared with 366 km. (227 miles) on June 30, 1942. Goods operating receipts during this financial year amounted to 3,480,950 cordobas, compared with 3,209,790 cordobas in the preceding year; receipts from passenger traffic totalled 2,107,672 cordobas, against 1,594,904 cordobas. Maintenance of way expenses amounted to 980,410 cordobas or 15.8 per cent. of the total operating income, compared with 897,275 cordobas and 17.2 per cent.; maintenance of equipment expenses amounted to 730,256 cordobas or 11.8 per cent.; compared with 549,700 cordobas or 10.5 per cent.; transport expenses amounted to 1,112,000 cordobas or 18 per cent., compared with 890,588 cordobas or 17.1 per cent. Gross operating receipts per km. of line were 16,302 cordobas, compared with 14,269 cordobas; and operating expenses per km. of line were 8,822 cordobas, compared with 7,655 Cordobas.





The railways of Poland, indicating the areas occupied by Russia and Germany respectively in 1939. The recent advances of the Red Army have taken it beyond the pre-1939 frontiers of Latvia, Lithuania, and Poland, and within a short distance of East Prussia. Railway restoration in the reoccupied territories is on a vast scale (see editorial note, page 54)

## Staff and Labour Matters

### N.U.R. Annual Conference

The National Union of Railwaymen Annual Conference this year was held at Edinburgh; it commenced on July 3, continuing for a fortnight, and was presided over by Mr. F. J. Burrows, J.P., the President of the Union. In his presidential address, Mr. Burrows said that during the past four years the railwaymen had played a magnificent part towards the recovery of Great Britain, and in making possible the successful invasion of Europe. They had given fully in the hour of the country's need, and he looked to the public to support them in their just demands in the days to come. He said the railway industry must undergo great changes if it was to survive in the post-war world; the present system of four group companies was bound to disappear; and the development of road transport would be so enormous, with everything in its favour, that the railways, as at present constituted, could not hope to compete in the scramble for traffic. He was convinced that only by complete public ownership of transport could the railwaymen be saved from disaster, and suggested that as the railways would remain under Government control for 12 months after the cessation of hostilities, that would give sufficient time for the necessary legislation to be passed. War advances were temporary expedients designed to meet wartime conditions, but they did not ensure permanent standard conditions of service, and he was of the opinion that the efforts of the union should be directed to the question of consolidation at an adequate minimum wage level.

Addressing a mass meeting on the eve of the conference, Mr. J. Benstead, the General Secretary of the union said that the N.U.R., with the A.S.L.E.F., had presented to the railway companies a joint claim for pensions for all railwaymen, and was awaiting a reply. He asked whether anyone could assert that the union had reached the limit of its endeavours when it had a minimum wage of 77s. per week, and said that in the Government White Paper stress was laid on the desire for stability of wages. Given a reasonable standard minimum wage coupled with differentials in accordance with skill and responsibility, the union would be prepared to negotiate for stability inside the railway industry if these things were added to them. The Government had been silent on what was to happen to transport after the war, and he was coming to the conclusion that it did not know what it was going to do, but the three railway trade unions were not going to have their fate decided without having something to say on behalf of railwaymen and their dependents. Dealing with the future of transport, he said the only constructive statement had been the report of the Labour Party pledging itself to the public ownership of transport under a national authority.

The conference passed a resolution on the post-war organisation of transport in the following terms: "This A.G.M. recalls that for many years the National Union of Railwaymen has been pressing for the complete co-ordination of transport on a national basis with service to the community rather than profit-making as a guiding motive. We, therefore, welcome and approve the report of the National Executive Committee of the Labour Party, which sets forth clearly a scheme for the post-war organisation of British transport, believing with them that a properly organised transport system is

essential if the national requirements of post-war Britain are to be adequately met and the wages and general conditions of service of the workers in the industry safeguarded."

### Cost-of-Living Sliding Scales

A review of cost-of-living sliding scales for the regulation of wages in *The Ministry of Labour Gazette* for June states that in a number of industries, collective agreements between organisations of employers and employees are in operation providing for the automatic adjustment of wage rates, on a pre-arranged basis, in accordance with the changes in the average level of working-class cost-of-living, as indicated by the official index figures which are regularly published in the monthly issues of the *Gazette*. This method of regulating wages was first introduced in certain industries towards the end of the last war, and was gradually extended to a number of other industries and services until the total number of employees covered by such arrangements had risen, by the year 1922, to about three million. In some industries and services these arrangements were subsequently suspended or abandoned, and by 1939 the number of employees covered had fallen to about 1½ million. During the war, however, there has been a further extension of such agreements to some other important industries, including coal mining, pig-iron manufacture, iron and steel manufacture, cotton spinning and weaving, pottery manufacture, and the tobacco industry; and although in a few industries

and services (e.g., the railway service, electrical cable manufacture, and the non-trading services of some local authorities) sliding scales which were in operation at the beginning of the war have since been suspended or abandoned, the total number of employees whose wage rates are now subject to periodical adjustment under arrangements of this kind is estimated to be about 2½ million.

It should be observed that increases in wage rates during the war, in the industries in which these arrangements are in operation, have not as a rule been restricted to those taking effect under the cost-of-living sliding scale agreements, the great majority of the 2½ million employees concerned having received additional increases in wage rates, or war bonuses, either by direct agreement between the employers' and employees' organisations or by arbitrators' awards. In many of the industries substantial increases in wage rates have been granted as special bonuses, advances in basic rates, and so forth, quite distinct from those accruing under the operation of the sliding scales. In some other industries the terms of the sliding scale agreements have been altered so as to provide for an immediate increase in the cost-of-living wage, additional to the amount warranted by movements in the cost-of-living index figure. Most of the additional increases referred to have taken effect during the period, since 1941, in which the official cost-of-living index figure has remained almost stationary.

## Questions in Parliament

### Control Agreement

Sir John Mellor (Tamworth—C.) on July 12 asked the Parliamentary Secretary to the Ministry of War Transport, whether he would publish the correspondence between the Minister of War Transport and Sir Ronald Matthews, referred to in the published letter, dated June 16, 1944, from the Minister to the Chairman of the Railway Companies Association or such portion of the correspondence as dealt exclusively with finance.

Mr. P. J. Noel-Baker (Parliamentary Secretary, Ministry of War Transport) stated in a written answer: For the reason which I gave to Sir John Mellor last December, and again in March, the Minister of War Transport is not prepared to publish the correspondence in question. To issue part of it might be unfair to the parties and I do not think that it would be a practical course to make a limited selection of extracts from the correspondence and records of the discussions which constituted the negotiations leading to the agreement.

### Revenue of Railways

Sir Frank Sanderson (Ealing—C.) on July 12 asked the Parliamentary Secretary to the Ministry of War Transport, whether he could state the net receipts of the railways for the years 1941, 1942, and 1943 respectively; and the amount accruing to the Government during the same period.

Mr. Noel-Baker in a written answer stated: Sir Frank Sanderson will find the information for which he asks in Cmd. Papers 6349, 6436, and 6512.

### Seats on Trains

Mr. E. H. Keeling (Twickenham—C.) on July 11 asked the Secretary of State for War, whether he was aware that his department was ordering special trains for German prisoners on the basis of one

seat a prisoner; and, so that the British public and soldiers on leave might enjoy a fair share of the accommodation and locomotive power available, whether he would give instructions that in future accommodation was to be provided on the basis of one seat for two prisoners.

Sir James Grigg (Secretary of State for War): I sympathise with Mr. Keeling's suggestion. But to maintain proper control of the prisoners with the minimum number of guards, it is essential that they should all be seated, and therefore, the suggestion is not practicable.

Mr. Keeling: Is not the Minister aware that on the Continent British prisoners are satisfactorily guarded by the enemy in trucks—*quarante hommes a truck*—and will he reconsider this matter, which is arousing public indignation?

Sir Henry Morris-Jones (Denbigh—Lib. Nat.): Is the Minister aware that his colleagues in this House have to stand in railway corridors for hours on end; and why is this preferential treatment given to German prisoners of war?

Sir J. Grigg: It is in the interest of guarding them for the State.

### Investment in Argentine Railways

Sir Frank Sanderson (Ealing—C.) on July 11 asked the Secretary of State for Foreign Affairs, whether, in view of the importance, in the national interests of conserving our remaining overseas investments, he would give the utmost support to the British directors of the Argentine railways, who proposed shortly to make a further visit to the Argentine, with the object of securing agreement on a national plan of reorganisation and obtaining a reasonable return on the British capital invested.

Mr. George Hall (Under Secretary of State for Foreign Affairs): I would refer Sir Frank Sanderson to the replies returned by the Foreign Secretary on June 21 to a question and supplementary



question by Lady Apsley (Bristol Central—C.). I understand that the boards of the companies have not yet completed their examination of the visiting directors' conclusions and it would therefore still be premature for any comment to be made on them. The Secretary of State for Foreign Affairs is, however, well aware of the importance of the financial interests involved which can in general count on full support from His Majesty's Government.

Sir F. Sanderson: Is the Under Secretary aware that the prime causes of the financial difficulties are their depreciation of their currency in 1932, and the imposition of a surcharge on remittances to this country? Does he not consider that with good will on both sides a more equitable adjustment could be made, which would ultimately prove to the advantage of both countries?

Mr. Hall: A conference was held between representatives of the directors of this company and myself at the Foreign Office. I think Sir Frank Sanderson will be well advised to leave the matter where it is, because they are well aware of the difficulties.

Mr. Aneurin Bevan (Ebbw Vale—Lab.): Is the Under Secretary aware that an organisation, speaking for these directors in this country, protested at the higher rates in the Argentine being used to give higher wages to the railway employees, and said that higher dividends ought to be paid?

Mr. Hall: I have no knowledge of that.

Mr. R. R. Stokes (Ipswich—Lab.): Is not the Argentine Government merely following the very bad example set by His Majesty's Government?

There was no reply.

#### Railway Rates Tribunal Order

Major M. Petherick (Penryn & Falmouth—C.) on July 12 asked the Parliamentary Secretary to the Ministry of War Transport, why the Railway Order (S.R. & O., No. 649, of 1944) in which there were references to 11 earlier Statutory Rules and Orders, did not contain any explanatory memorandum; and if he would state the effect of the Order.

Mr. Noel-Baker: This is an Order made by the Railway Rates Tribunal. It gives effect to a judicial decision of that court. The Order was made by the tribunal under the provisions of the Railways Act, 1921.

#### Lighting Restrictions

Sir Ralph Glyn (Abingdon—C.) on July 6 asked the Secretary of State for the Home Department, whether, under existing circumstances, he would consider the advantages of removing the painted areas on railway carriage windows and increasing the lighting on stations and at goods yards, thus reducing the rate of casualties during the coming winter and speeding up the traffic on the railways.

Mr. Herbert Morrison (Secretary of State for Home Affairs): By agreement with the Departments concerned, the standards of lighting in railway carriages, in goods yards and on some railway stations have been substantially increased recently. I do not, however, consider the time has yet arrived when the painted areas on carriage windows can be removed.

Sir R. Glyn: Will the Minister be good enough to reconsider this, in view of the overcrowding in trains, and the difficulty of people being able to read by day, and in view of the well-known fact that this light in trains does not assist the enemy in any way?

Mr. Morrison: Certainly I will recon-

sider it, because we are always reconsidering these matters. I am, in fact, considering this in a wider aspect to which it is related.

#### M.P.s. and Railway Passes

Mr. Bartle Bull (Enfield—C.) on July 6 asked the Financial Secretary to the Treasury if he would consider issuing passes or season tickets on the Underground or railway to Members of Parliament whose constituencies were only a short distance from London.

Mr. R. Ascheton (Financial Secretary to the Treasury): No, Sir. I regret to say that I cannot fall in with Mr. Bull's suggestion. Any general issue of season tickets instead of vouchers would entail a considerable increase in the cost of Members' free travel facilities, and I should not feel able to justify preferential treatment for any particular group of Members.

Mr. Bull: Cannot the Financial Secretary introduce a ticket which could be punched at the time? For a short fare on the Underground you have to write out a ticket at the booking office and you would be lynched before you had written it out.

Mr. Ascheton: Perhaps Mr. Bull will recollect the original object of this provision was to remedy the inequality of expenses between Members of London constituencies and Members whose constituencies are some distance away.

Mr. E. Shinwell (Seaham—Lab.): Is it not time to reconsider this matter entirely? Is the Financial Secretary aware that in most democratic countries where there are similar institutions Members receive free railway warrants to any part of the country, and that the trifling additional amount involved here would not be regarded by the general public as serious?

Mr. A. Woodburn (Clackmannan & Eastern—Lab.): Is the Financial Secretary not aware that Members of the House perform a double function? They are Members for their constituency and they are also Members for the whole country, and serve the whole country. Would not the sensible thing be to get rid of these silly little vouchers and have a complete pass?

Mr. Ascheton: That raises quite a different question from that which is on the Order Paper.

Mr. W. Thorne (Plaistow—Lab.): Is it not a fact that any Member of Parliament can go to the Fees Office and get a packet of vouchers and change them? I put in a voucher every morning at my station, and get a ticket for Westminster.

#### Post-War Problems

Mr. J. Parker (Romford—Lab.) on July 5 asked the Parliamentary Secretary to the Ministry of War Transport what staff he had appointed specifically to consider the post-war problems of shipping and rail and road transport; and what was the rank of the senior official so engaged.

Mr. P. J. Noel-Baker (Parliamentary Secretary, Ministry of War Transport) stated in a written answer: Under the general direction of the most senior officers of the Department, the duty of considering and co-ordinating questions affecting shipping and inland transport after the war has been specially allocated to two Assistant Secretaries.

#### Road Safety

Mr. W. Leach (Bradford Central—Lab.) on July 5 asked the Minister of Information if he was aware that of 35 B.B.C. flashes on road accidents, in which the principal blame was placed on children, not one sought to impress on drivers the

dangers of high speed; and would he correct that.

Mr. Brendan Bracken (Minister of Information): The purpose of these flashes is not to assess blame. They are designed, in conjunction with the Ministry of War Transport, to remind the public, and particularly those in charge of children, of the rules of road safety.

Mr. Ivor Thomas (Keighley—Lab.) on July 5 asked the Minister of Information whether he would cause to be made, or assist the Royal Society for the Prevention of Accidents to make, a 35 millimetre film designed to promote safety on the roads.

Mr. Brendan Bracken: A 35 millimetre road-safety film is available for showing by mobile units. Several trailers have been shown at various times in cinemas throughout the country and others are under consideration.

Mr. Edgar Granville (Eye—Ind.): In view of the fact that the Minister of War Transport said recently that casualties on the roads exceeded war casualties by 200,000, can the Parliamentary Secretary say whether there is any effective co-operation between Government Departments to deal with this terrible war on the roads?

Mr. Bracken: As far as publicity is concerned, there is admirable co-ordination, but publicity cannot cure this grievous situation.

Mr. Thomas: Is there any reason why this film should not be shown throughout the cinemas in the country, which I understand, was the suggestion?

Mr. Bracken: I cannot impose on cinemas in this country the obligation of showing Ministry films. I can ask for their co-operation, and I have got it in a very large number of matters. I can only call the attention of the people in control to the film.

#### Road Accidents

Sir John Graham Kerr (Scottish Universities—C.) on July 12 asked the Parliamentary Secretary to the Ministry of War Transport, if he would state the number of road accidents reported to his department during the last available year and the number of deaths arising therefrom.

Mr. Noel-Baker: During the war, the police have reported only the number of fatal and non-fatal injuries caused by road accidents. During the 12 months which ended on May 31, 1944, 6,166 persons were killed and 121,596 were injured. It is possible that the police have not reported minor injuries as fully as before the war, and comparisons with pre-war years may not, therefore, be valid.

Mr. M. P. Price (Forest of Dean—Lab.) on July 12 asked the Parliamentary Secretary to the Ministry of War Transport, what steps had been taken to deal with the number of fatal accidents, due to military traffic, that had taken place on the South Wales main road between Gloucester and Chepstow.

Mr. Noel-Baker stated in a written answer: The military authorities are doing all they can to ensure that further accidents do not occur, and special military police patrols have been established. Four additional warning signs are being erected on the road at points where it is considered that they would be of value.

#### Civil Airports

Major Geoffrey Hutchinson (Ilford—C.) on July 6 asked the Secretary of State for Air whether the question of a suitable main air terminal for civil air services in London was under consideration; which

of the existing or proposed airports was regarded as suitable for that purpose; and whether he could make any statement of the policy of the Government concerning the establishment of an adequate airport for London.

Captain Harold Balfour (Joint Under Secretary of State for Air) stated in a written answer: The choice of civil airports in the London area after the war, in all probability, will be made from the many airfields which are being used or developed in wartime for war purposes and are capable of extension or adaptation for post-war civil needs. Major Hutchinson will, I am sure, recognise that in the present circumstances it is not possible for reasons of security to discuss the location of military airfields.

### G.W.R. Comforts Fund

Over 15,000 Great Western Railway men and women are now in the Navy, Army and Air Force, and the auxiliary services, and of these thousands are overseas; many are prisoners of war and some are in war hospitals.

To maintain the morale of these men and women is valuable work, and it was for this purpose that the Great Western Railway Comforts Fund came into being. The fund was inaugurated in December, 1939, and registered under the War Charities Act, 1940. The Chairman of the Committee is Mr. H. Adams Clarke, Chief Staff & Establishment Officer; the Secretary and Organiser of the Fund is the company's Welfare Officer.

The fund is maintained by voluntary contributions from the staff and the interest which has been shown in the work, as evidenced by increasing support, has been most stimulating to the organisers. Contributions to the fund are practically double what they were two years ago and have more than justified the efforts expended in making known to the company's employees the needs of their less fortunate comrades.

These men and women, at home and overseas, receive parcels regularly; special consideration is given to those serving overseas. The needs of prisoners of war receive priority and there is no doubt whatever that the gifts selected principally to provide comfort do much to alleviate the weariness and home-sickness experienced so bitterly in captivity. Parcels sent to war hospital patients contain items particularly adapted to their needs. The gifts are despatched in the names of the colleagues at the depots and stations with whom the recipients were associated before joining the Services. This method maintains a friendly feeling of home interest.

The total number of parcels despatched since the inauguration of the fund is over 81,000, and all these have contained contributions to human comfort, such as:—Books, cigarettes, tobacco, writing materials, toilet articles, games, handkerchiefs, clothing repair requisites, steel mirrors, musical instruments, meat cubes, razor blades and sharpeners, scissors, socks, pullovers, gloves, helmets, brushes, puzzles, playing cards, etc. Some of the parcels have travelled long distances to the hills of Burma and to the jungles of New Guinea.

The present rate of distribution is 2,000 parcels each month, and every care is exercised, when purchasing the various comforts, to ensure that the recipients are given articles that will be of real service to them. To this end the make-up of parcels is constantly under review.

## Notes and News

**Institution of Signal Engineers.**—The luncheon which was to have been held by the Institution of Railway Signal Engineers on July 28 has been postponed until further notice.

**Post Office Receipts.**—The average daily receipts of the Post Office in the United Kingdom for May amounted to £225,506, compared with £204,540 for the corresponding month of last year, and with £209,222 in April last.

**Temporary Assistant Accountant Required.**—The Government of Sierra Leone requires the services of a temporary assistant accountant for the Railway Department. Details are given in our Official Notices on page 75.

**Puerto Cabello & Valencia Railway Co. Ltd.**—By Order of the Court a meeting of the holders of the first charge 5 per cent. bonds of this company has been convened for the purpose of considering a scheme of arrangement between the company and such holders. The meeting is proposed to be held on July 27 at Dashwood House, Old Broad Street, E.C., at noon.

**Road Accidents in May, 1944.**—The return issued by the Ministry of War Transport of the number of persons reported to have died, or to have been injured, as a result of road accidents in Great Britain during the month of May last shows 632 deaths (compared with 431 in May, 1943), 3,222 seriously injured (compared with 2,222 in May, 1943), and 8,290 slightly injured (compared with 6,750 in May, 1943).

**Railbar at Glasgow (St. Enoch).**—The second L.M.S.R. railbar to be installed in Glasgow is that at St. Enoch Station, which was opened on July 11. The first is at the Central Station and was inaugurated some months ago. Mr. Arthur Towle, Controller, L.M.S.R. Hotel Services, and Mr. A. Morris, Assistant for Inspection to Controller, L.M.S.R. Hotel Services, were among those present at the opening ceremony at St. Enoch.

**Another Brazilian Nationalisation.**—It is reported that the railway from Guaira to Portomendes, linking the upper and lower reaches of the River Parana, in the Federal territory of Iguazu, was taken over by the Brazilian Government in April last, under a Presidential decree. It is stated that the Government has also taken over all the river harbour installations at Guaira and Portomendes. Both the railway (which is believed to be confined to goods traffic), and the harbours, were worked by the Mate Larangeira Company, which is to be compensated by receiving the amount fixed by a Federal valuation of the properties.

**Memorial to Mr. A. C. Stamer.**—A gift of £1,500 is being made by the Darlington Railwaymen's Carnival Committee to Darlington Memorial Hospital for the building of a rehabilitation centre as a memorial to the late Mr. A. C. Stamer, Assistant Chief Mechanical Engineer, L.N.E.R., from 1923 to 1933, and formerly President of the Railwaymen's Carnival Committee and Chairman of the Memorial Hospital Committee, whose death was recorded, and a portrait and biography of whom appeared, in our issue of February 25 last. The sum will provide only for the building and equipping of a temporary structure, which work, it is hoped, will be put in hand at an early date. After the war the Carnival Committee is to continue its efforts and intends to provide funds for a permanent rehabilitation centre, the cost of which will

be greater. The Carnival Committee also is giving £500 to the Darlington Queen's Nurses' Association for post-war development.

**Torquay Harbour Works.**—The Torquay Corporation is applying to the Minister of War Transport for an Order under the Special Enactments (Extension of Time) Act, 1940, in respect of powers conferred by the Torquay Corporation Act, 1937, for the construction of an extension of Haldon Pier, of a wall on the bed of the Outer

## British and Irish Railway Stocks and Shares

Stocks	Highest 1943	Lowest 1943	Prices	
			July 18, 1944	Rise/ Fall
G.W.R.				
Cons. Ord. ....	65½	57½	61½	+
5% Con. Pref. ....	120½	108	119½	—
5% Red. Pref. (1950) ..	110½	106	105	—
5% Rt. Charge ....	137½	123½	131½	—
5% Cons. Guar. ....	135½	121½	131½	—
4% Deb. ....	118	107½	114½	—
4½% Deb. ....	119	109½	115½	—
4½% Deb. ....	124½	116	120½	—
5% Deb. ....	138	127	134½	+
2½% Deb. ....	77	72½	74½	—
L.M.S.R.				
Ord. ....	34½	28	31½	—
4% Pref. (1923) ....	66½	58	61	—
4% Pref. ....	80½	73	79	—
5% Red. Pref. (1955) ..	105½	102	103½	—
4% Guar. ....	107	98½	103½	—
4% Deb. ....	109½	103½	106	—
5% Red. Deb. (1952) ..	111½	108	109½	—
L.N.E.R.				
5% Pref. Ord. ....	12½	7½	9	—
Def. Ord. ....	5½	3½	4½	—
4% First Pref. ....	66½	57½	61	—
4% Second Pref. ....	36½	30½	33½	—
5% Red. Pref. (1955) ..	99½	93	100½	—
4% First Guar. ....	102½	94	100½	—
4% Second Guar. ....	93½	85½	92	—
3% Deb. ....	86½	78½	83	—
4% Deb. ....	109½	101½	105	—
5% Red. Deb. (1947) ..	106½	102	103	—
4½% Sinking Fund Red. Deb. ....	108	103½	105½	—
SOUTHERN				
Pref. Ord. ....	80	72½	78	—
Def. Ord. ....	26½	20½	25½	—
5% Pref. ....	119½	106½	110½	—
5% Red. Pref. (1964) ..	114	108½	114½	—
5% Guar. Pref. ....	136	122	131½	—
5% Red. Guar. Pref. (1957) ....	117	109½	114½	—
4% Deb. ....	117½	106	112½	—
5% Deb. ....	137	126	134	—
4% Red. Deb. (1962-67) ....	112	106½	109½	—
4% Red. Deb. (1970-80) ....	112	107	109½	—
FORTH BRIDGE				
4% Deb. ....	109	104½	104	—
4% Guar. ....	105	102½	102½	—
L.P.T.B.				
4½% "A" ....	125½	114	121½	—
5% "A" ....	133½	123	130½	—
3% Guar. (1967-72) ....	100½	97	99	—
5% "B" ....	124	114	121½	—
5% "C" ....	72	53	72	—
MERSEY				
Ord. ....	34½	27	33½	—
3% Perp. Pref. ....	68	59½	69	—
4% Perp. Deb. ....	104	102½	103	—
3% Perp. Deb. ....	83	78½	79	—
IRELAND* BELFAST & C.D.				
Ord. ....	9	6	9½	—
G. NORTHERN				
Ord. ....	24½	16	26½	+
Pref. ....	—	—	43½	+
Guar. ....	—	—	68	+
Deb. ....	—	—	86	—
G. SOUTHERN				
Ord. ....	30	9½	56½	+
Pref. ....	30	11	56½	+
Guar. ....	64	26½	73	+
Deb. ....	88½	51½	94½	+

\* Latest available quotations



## OFFICIAL NOTICES

## Overseas Employment

**TEMPORARY ASSISTANT ACCOUNTANT** required by the Government of Sierra Leone for the Railway Department for one tour of 12 to 24 months in the first instance. Salary £400, rising to £600 a year. Cost of living allowance for single men is £48 and Separation Allowance for married men £160 on £400. Free passages and quarters. Candidates should have had experience in the Head or Branch Accounts Office of a British or Colonial Railway and should be capable of taking charge of the expenditure section of the Railway Accounts Office. A knowledge of railway statistics is desirable, though not essential.

Applications in writing (no interviews) stating date of birth, full details of qualifications and experience, including present employment; also Identity and National Service or other registration particulars, and quoting Ref. No. O.S. 190 should be addressed to the Ministry of Labour and National Service, Appointments Department, Sardinia Street, Kingsway, London, W.C.2

## OFFICIAL ADVERTISEMENTS

**OFFICIAL ADVERTISEMENTS** intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is 9.30 a.m. on the preceding Monday. All advertisements should be addressed to:—*The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

## Universal Directory of Railway Officials and Railway Year Book

50th Annual Edition, 1944-45 ready shortly

This unique publication gives the names of all the principal railway officers throughout the world, together with essential particulars of the systems with which they are connected. Much general and statistical information about railways is also concisely presented

Price 20/- net.

THE DIRECTORY PUBLISHING CO., LTD.,  
33, Tothill Street, Westminster, S.W.1

Harbour, and of a widening of the footpath along the northern end of the Inner Harbour.

**L.N.E.R. Act, 1944.**—The Royal Assent was given on July 13 to the London & North Eastern Railway Act, 1944.

**Fischer Bearings New Trade Mark.**—The Fischer Bearings Co. Ltd. has adopted "FBC" as a trade mark. This company, which is entirely British and the products of which are British-made throughout, is controlled by British Timken Limited.

**Diesel Engine Manufacture in Mexico.**—The manufacture of diesel engines in Mexico is being considered by a group composed of representatives from the Cia. Amex of Mexico, the Crédito Internacional de Mexico, and a U.S.A. diesel engine company.

**P.W.I. Manchester & Liverpool Section.**—By courtesy of Mr. W. K. Wallace, Chief Civil Engineer, L.M.S.R., and the arrangement of Mr. K. C. Marrian, District Engineer, Manchester, L.M.S.R., members of the Section will be enabled to visit Crow Nest Junction on July 30. The visit will form a fitting conclusion to the lecture and film given by Mr. D. V. Adams, of Taylor Bros. (Sandiacre) Ltd., in last year's syllabus.

**Permanent Way Institution.**—In connection with the Diamond Jubilee celebrations of the Permanent Way Institution, and by courtesy and arrangement of Mr. W. K. Wallace, Chief Civil Engineer, L.M.S.R., an exhibition of permanent way tools, components, appliances, photographs and drawings will be held on the concourse of Chapel Street Station, Southport, from July 26 to August 4, both dates inclusive. The exhibition will be opened officially at 12 noon on the former date, and will be on view to the public on each succeeding day from 10 a.m. to 5 p.m.

**Nitrate Railways Co. Ltd.**—The statement by the Chairman, Mr. Patrick L. Fleming, circulated with the report and accounts for 1943, showed that the export of nitrate from Tarapaca was 30 per cent. less. The tonnage of nitrate, coal, and petroleum carried by the railway, and the receipts therefrom, declined in approximately that proportion, but there was some increase in other traffic, so that gross revenue decreased by £27,551, or 14 per cent. Expenses went up by £27,236. Fuel and materials cost over £12,000 extra and compulsory increases of salaries and wages amounted to more than £14,000. In January, the company was given an increase in tariffs of 7 per cent., with a promise of further revision. The question of expro-

priation continued to have the attention of the Chilean authorities. While progress towards any definite conclusion was slow and spasmodic, he thought it was really progress.

**Spanish Railway Sale.**—German reports state that the Escoriaza (Spanish) Company in April last purchased the Belgian-owned narrow-gauge electric railway linking San Sebastian with Tolosa.

**Institute of Transport 1944-45 Session.**—The inaugural meeting of the 1944-45 (Silver Jubilee) Session of the Institute of Transport will be held on Tuesday, October 3, 1944, at 5.30 p.m. in the lecture theatre of the Institution of Electrical Engineers, Savoy Place, London, W.C.2, when Mr. Robert Kelso will deliver his presidential address.

**Swedish Streamline Trains.**—Reuters reports that electric streamline trains, to develop speeds of up to 130 km. p.h., are to be built in Sweden. It is hoped that they will be placed in service in about eighteen months' time. The coaches are to be provided with thermostatically-controlled heating and air conditioning and will be of all-welded steel construction. The units will develop about 1,200 h.p.

**Institute of Transport Local Secretaries.**—The annual meeting of the Honorary Secretaries of local sections of the Institute of Transport was held recently at Birmingham. Mr. H. Howells was elected Chairman of the meeting. After the conclusion of formal business, the visitors were entertained at dinner at the Queen's Hotel by Mr. L. W. Gupwell, Chairman of the Midland Section of the Institute, and Mr. A. C. Baker, General Manager, Birmingham City Transport.

**Road and Rail.**—Under this title a letter was published in *The Times* of July 12, signed by Mr. A. E. Sewell and Mr. Roger W. Sewill, respectively Rail Chairman and Road Chairman of the Road & Rail Central Conference. The text of the letter is as follows:—In the press of July 4, Mr. Fred Burrows is reported to have said, in the course of his presidential address to the annual conference of the National Union of Railwaymen, that in consequence of the development of road transport after the war and the railways being unable, as at present constituted, to compete in the scramble for traffic, that "rates would be forced down to an uneconomic level and the unremunerative traffic would be handed on to the railways, who, as common carriers, must accept it. I am convinced that only by complete public ownership of transport can the railwaymen be saved from disaster." Mr. Burrows is apparently ignorant of the

fact that for several years representatives of the railways and of the roads have been considering plans to prevent exactly what he foretells as a certainty. If these two services are allowed to complete their arrangements, subject to the right of the trader to appeal, there will be no "scramble for traffic," but railways and the roads will be enabled to compete for traffic under conditions which they both regard as fair and which will be also in the wider interests of the nation. (See editorial notes, page 53).

**Port of London Tug Owners Charges.**—The Minister of War Transport on July 10, 1944, made the Port of London Tug Owners (Control of Charges) (Revocation) Order, 1944.

**Irish Traffic Estimates.**—According to the *Irish Trade Journal* the average weekly traffic receipts of railways (internal and cross-border) for the first three months of 1944 were:—January £147,610, February £146,077, and March £154,774. Comparative figures for the corresponding months of 1943 were respectively £117,635, £120,247, and £129,370.

**Bergslagen Railways.**—This company, which comprises the largest privately-owned railway system in Sweden, returned a net profit for 1943 of kr. 2,420,000, compared with kr. 2,360,000 for 1942. A total of kr. 3,770,000 was available for distribution, against kr. 4,280,000 the year before; but despite this decline the dividend for 1943 was increased to 6 per cent. from that of 5 per cent. for 1942.

**General Electric Co. Ltd.**—For the year to March 31, 1944, the profit on trading and income from investments amounted to £1,812,409 (£1,748,917). Net profit, after deducting £460,699 (£459,619) for depreciation, £4,335 (£4,281) for directors' fees, and £106,645 (£89,276) contribution to pension fund, came to £1,240,730 (£1,195,741) to which has to be added £817,762 brought forward, making a total balance available of £2,058,492. The directors recommend a transfer of £700,000 (same) to income tax reserves, and a dividend on the ordinary stock at the rate of 10 per cent. per annum, less tax, together with a bonus of 7½ per cent., less tax, leaving £865,134 to be carried forward. The distributions to stockholders now recommended are the same as for the previous year.

## Forthcoming Meetings

The luncheon which was to have been held by the Institution of Railway Signal Engineers on July 28 has been postponed until further notice.

## Railway Stock Market

Stock markets have remained cheerful, with further gains in British Funds and the continuance of a general rise in industrial shares on hopeful views of post-war prospects. The knowledge that over the next few months £11,000,000 of Australian loans are to be repaid was a factor sustaining firmness in investment securities, which are likely to be in increased demand because of the pressure of money seeking an outlet. It is not unreasonable to expect that some part of the demand will centre on home railway prior charges, bearing in mind that the latter continue to offer yields comparing favourably with the return on other front-rank investments. Great Western 4 per cent. debentures, for example, yield nearly  $3\frac{1}{2}$  per cent., and this railway's guaranteed stock fully  $3\frac{1}{2}$  per cent., and Southern guaranteed gives a similar return, and higher and generous yields continue to rule in the case of L.N.E.R. guaranteed issues.

Home railway junior stocks have been generally steady, but there was little disposition for demand to improve, possibly because of a tendency to await the impending interim dividend decisions, although these continue to be expected to be the same as a year ago. Bearing in mind the general rise in all other equity securities over the past few months, it is illogical that home railway junior stocks have not responded to this widespread movement; but it would seem that sooner or later the generous yields cannot help attracting more atten-

tion. It is true, of course, that much of the persistent demand for industrial shares is not based on the immediate dividend yield, but on the assumption that after the war, with the expected removal of E.P.T., there may then be scope for a general improvement in dividends of industrial companies. It would seem, however, that hopes in this connection are in many cases now liberally discounted in current prices.

Other sections of the market for railway securities have received more attention. Despite general recognition of the current difficulties and the probability that the position will not be clarified until later in the year when the mission of directors revisits the Argentine, Argentine railway securities have continued to take heart from Mr. Eden's recent assurance that the importance of the financial interests involved in the Argentine is well understood and would have the support of the British Government. In most cases Argentine railway securities have not fully maintained recent gains, but there was little selling, and the slight reaction in various debenture stocks appeared to be due to a check to the better demand which was developing towards the end of last week. Antofagasta preference stock showed further response to the improved financial results, and Nitrate Rail shares moved up further. Canadian Pacific have been a much more lively market at higher prices, reflecting the increased attention given to Canadian securities after the good impression created by the increased earnings and dividends of the

Hudson's Bay Company and attention drawn to the belief that the development of the Dominion's resources will be accelerated after the war. An additional factor drawing attention to Canadian Pacifics, which returned to the dividend list with a 2 per cent. payment for 1943 (a conservative distribution), is that a return to interim dividend distributions may be announced next month. The market is already talking of the possibility of a higher total payment for the current year, although it is recognised that there is unlikely to be any marked modification of the conservative financial policy which has featured results in recent years. Elsewhere, United of Havana (1906) debentures were firmer, although expectations of better results for the year ended June 30 tended to be offset by vague market rumours of the possibility of a capital reorganisation scheme in due course.

Great Western ordinary at 61 $\frac{1}{2}$  was the same as a week ago, and L.M.S.R. ordinary was 31 $\frac{1}{2}$ , compared with 31 $\frac{1}{2}$ , and Southern deferred at 25 $\frac{1}{2}$  also moved slightly lower on balance. L.N.E.R. second preference has been maintained at 33 $\frac{1}{2}$ , although the first preference eased slightly to 61. In the Argentine section, B.A. Gt. Southern ordinary was 11 $\frac{1}{2}$ , compared with 11 $\frac{1}{2}$  a week ago. Elsewhere, Antofagasta preference rose further to 44, and Nitrate Rails shares to 76s. 3d. United of Havana 1906 debentures were 27. Canadian Pacifics rose from 16 to 17 $\frac{1}{2}$ . Indian railway stocks were higher in some cases on Indian buying.

### Traffic Table and Stock Prices of Overseas and Foreign Railways

	Railways	Miles open	Week ending	Traffic for week		No. of Weeks	Aggregate traffic to date			Shares or stock	Prices			
				Total this year	Inc. or dec. compared with 1942/3		Totals		Increase or decrease		Highest 1943	Lowest 1943	July 1, 1944	Yield % (See Notes)
							1943/4	1942/3						
South & Central America	Antofagasta (Chili) & Bolivia	834	9.7.44	34,200	+ 4,000	28	£ 793,900	£ 755,390	+ £ 38,510	Ord. Stk.	15½	10	10½	Nil
	Argentine North Eastern	753	8.7.44	14,568	+ 2,064	1	16,902	17,520	— 618	6 p.c. Deb.	22½	18	17½	Nil
	Bolivar	174	June, 1944	5,238	+	26	31,756	32,414	— 658	Bonds	23½	19	16	Nil
	Brazil	—	—	—	—	—	—	—	—	Ord. Stk.	8½	5½	5½	Nil
	Buenos Ayres & Pacific	2,807	8.7.44	110,100	+ 22,140	1	111,660	111,300	+ 360	Ord. Stk.	17½	9½	11½	Nil
	Buenos Ayres Great Southern	5,080	8.7.44	152,460	+ 20,940	1	172,200	197,940	+ 25,740	Ord. Stk.	10	9½	10½	Nil
	Buenos Ayres Western	1,930	8.7.44	57,360	+ 10,860	1	62,760	64,800	— 2,040	Ord. Stk.	16	9½	10½	Nil
	Central Argentine	3,700	8.7.44	166,941	+ 56,334	1	187,551	151,827	+ 35,724	Ord. Stk.	10½	6½	7½	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	4½	3	4	Nil
	Cent. Uruguay of M. Video	972	8.7.44	16,599	+ 4,709	1	39,777	44,098	— 4,321	Ord. Stk.	7½	4½	4½	Nil
	Costa Rica	262	May, 1944	26,525	+ 3,664	43	251,679	173,827	+ 77,852	Stk.	16	12½	14½	Nil
	Dorada	70	June, 1944	26,226	+ 3,993	26	149,309	120,492	+ 28,817	1 Mt. Db.	96	92	96	Nil
	Entre Rios	808	8.7.44	20,754	+ 3,714	1	23,640	24,528	— 888	Ord. Stk.	9	5½	4½	Nil
	Great Western of Brazil	1,030	8.7.44	20,700	+ 7,100	28	597,900	427,000	+ 170,900	Ord. Stk.	59.9	24½	31½	Nil
	International of Cl. Amer.	794	Apr., 1944	\$651,727	+ \$8,267	16	\$2,985,369	\$2,665,812	+ \$319,557	Ord. Pres.	2½	1½	1½	Nil
	Interoceanic of Mexico	22½	June, 1944	8,277	+ 82	26	46,430	53,590	— 7,160	5 p.c. Deb.	90	80	79	Nil
	La Guaira & Caracas	1,918	1.7.44	37,939	+ 4,744	27	1,186,985	862,760	+ 324,225	Ord. Stk.	7½	4	4½	Nil
	Leopoldina	483	30.6.44	ps. 550,800	— ps. 133,600	26	ps. 1,008,500	ps. 9,841,900	+ ps. 1,166,600	Ord. Stk.	1½	—	—	Nil
	Mexican	319	May, 1944	15,947	— 648	48	187,586	169,543	+ 18,043	Ord. Sh.	83.9	71.3	75.6	£3.68
	Midland Uruguay	382	30.6.44	5,055	+ 602	26	82,506	71,093	+ 21,413	Pr. Li. Stk.	75	51½	71	Nil
Nitrate	274	7.7.44	—	—	1	857,074	815,610	+ 841,464	Pref.	17½	10½	10	Nil	
Paraguay Central	1,059	June, 1944	121,351	+ 16,617	52	1,330,647	1,045,065	+ 285,582	—	—	—	—	Nil	
Peruvian Corporation	100	Apr., 1944	c 152,000	+ c 30,000	43	c 1,310,000	c 1,034,000	+ c 276,000	Ord. Stk.	71	57	48	Nil	
Salvador	153½	—	—	—	—	—	—	—	Ord. Sh.	37.6	20½	17.3	Nil	
San Paulo	160	June, 1944	5,530	+ 2,925	52	65,330	48,811	+ 16,519	Ord. Stk.	8½	3½	—	Nil	
Taltal	1,301	8.7.44	44,122	+ 7,762	1	50,421	74,249	+ 23,828	—	—	—	—	Nil	
United of Havana	73	May, 1944	1,581	— 131	48	16,314	15,817	+ 497	—	—	—	—	Nil	
Uruguay Northern	—	—	—	—	—	—	—	—	—	—	—	—	Nil	
Canada	Canadian Pacific	17,034	7.7.44	1,208,200	+ 59,200	27	32,123,200	28,395,400	+ 3,727,800	Ord. Stk.	18	13½	15½	3½
	—	—	—	—	—	—	—	—	—	—	—	—	—	Nil
India	Barsi Light	202	May, 1944	23,250	+ 4,058	9	51,682	45,240	+ 6,442	—	—	—	—	Nil
	Bengal-Nagpur	3,267	Mar., 1944	1,036,350	+ 125,175	11	12,526,575	11,211,375	+ 1,315,200	Ord. Stk.	104½	101½	109½	3½
	Madras & Southern Mahratta	2,939	Mar., 1944	358,125	+ 7,925	52	10,447,866	8,913,942	+ 1,533,924	—	—	—	—	Nil
	South Indian	2,349	20.12.43	199,410	+ 24,449	37	5,321,558	4,562,445	+ 750,113	—	—	—	—	Nil
Various	Egyptian Delta	607	10.6.44	18,098	+ 4,143	10	132,482	98,431	+ 34,051	Pr. Sh.	6½	2½	4	Nil
	Manila	—	—	—	—	—	—	—	—	B. Deb.	45	32	48	Nil
	Midland of W. Australia	277	May, 1944	21,833	+ 12,686	48	312,986	355,514	+ 42,528	Inc. Deb.	101	93	100½	£4.19
	Nigerian	1,900	31.3.44	60,973	+ 9,831	52	4,121,523	3,606,468	+ 515,055	—	—	—	—	Nil
	South Africa	13,291	13.5.44	827,962	+ 21,846	6	5,333,699	5,031,550	+ 302,149	—	—	—	—	Nil
	Victoria	4,774	March, 1944	1,363,928	+ 222,955	—	—	—	—	—	—	—	—	Nil
	—	—	—	—	—	—	—	—	—	—	—	—	—	Nil

Note. Yields are based on the approximate current price and are within a fraction of  $\frac{1}{4}$ . Argentine traffic is given in sterling calculated @ 16 $\frac{1}{2}$  pesos to the £

† Receipts are calculated @ 1s. 6d. to the rupee

§ x d.